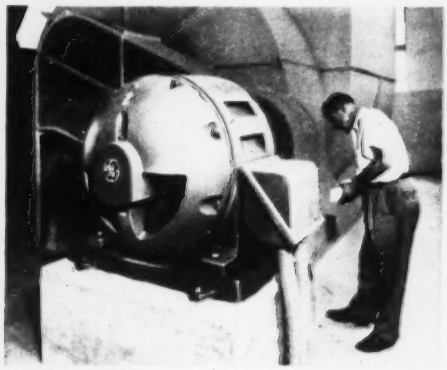
ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

ENGINEERING REPORTS:

OPERATING ECONOMY for the new G-E equipped Norfolk-Portsmouth tunnel is provided by its variable-intensity fluorescent lighting system, Tri-Clad* ventilating-fan motors, centralized control, and reliable power supply.

G-E FLUORESCENT LIGHTING provides safer, more uniform, shadowless illumination. To avoid light-blindness at portals, intensity is increased during bright sunlight periods.



VENTILATION is provided by four exhaust fans, each driven by a G-E 2-speed, 250-40-hp motor. Motors run at high speed only in emergencies.

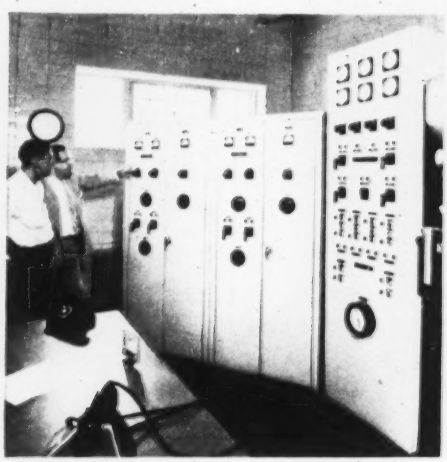
Continuous lines of light increase safety of new tunnel

G-E electrical system for Norfolk-Portsmouth Tunnel also features one-man control, reliable power supply

An outstanding feature of the 3350-foot tunnel, recently built beneath the Elizabeth River as part of a bridge-tunnel project linking Norfolk and Portsmouth, Va., is the electrical system that helps handle heavy traffic with greater safety and economy. The electrical equipment was designed by General Electric engineers working closely with the Elizabeth River Bridge Tunnel Commission, its consultants, Parsons, Brinckerhoff, Hall & Macdonald, who designed the system, and its contractor, Merritt-Chapman & Scott.

Let G-E engineers help your engineers or consultants on electric equipment for heavy construction projects. Contact your local G-E Apparatus Sales Office early in the planning stage. General Electric Company, Schenectady 5, N. Y.

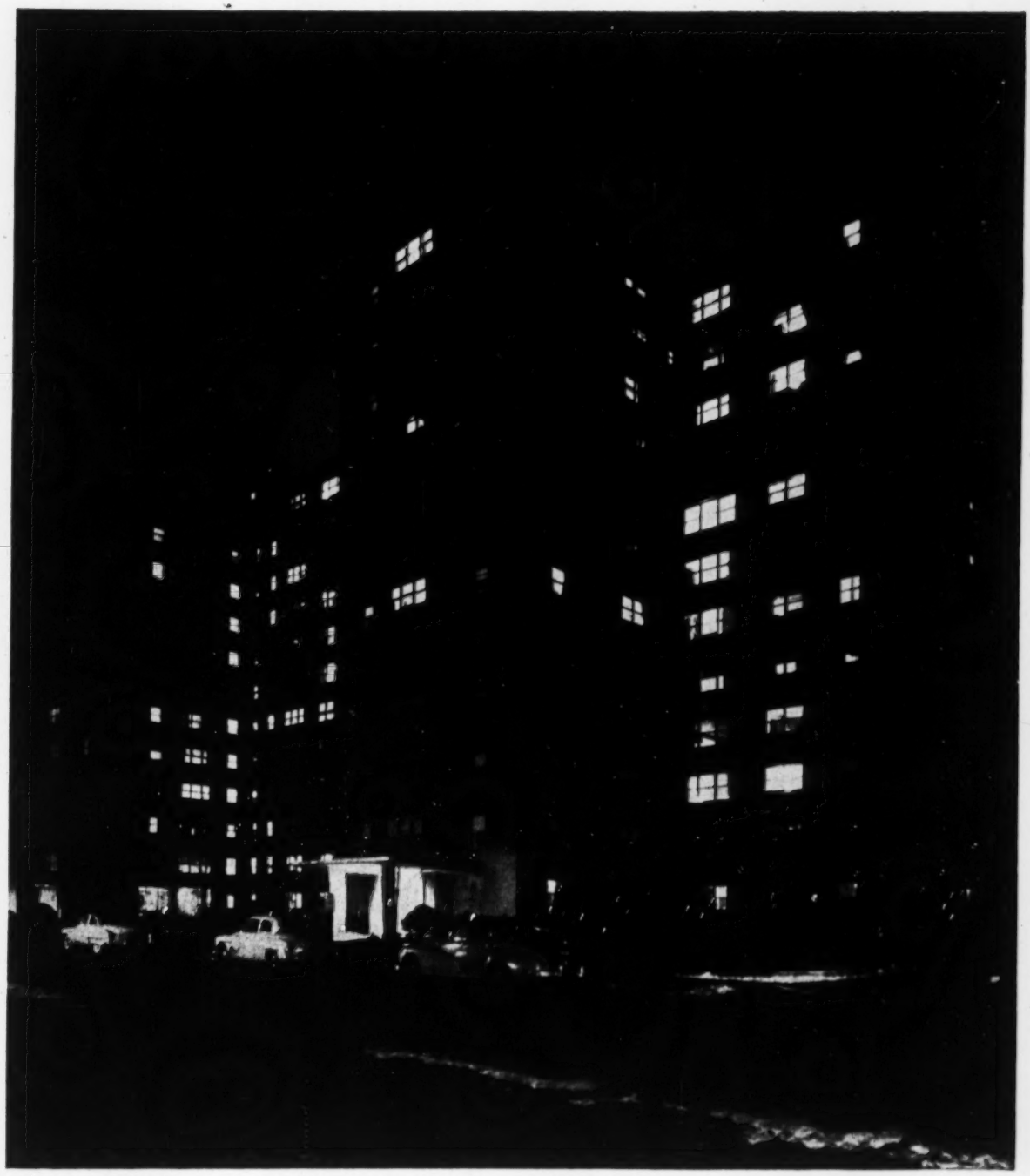
*Reg. trade-mark of General Electric Co. 664-27



ONE-MAN OPERATION is a key feature of this main control panel from which lighting, ventilation, and two G-E unit substations are controlled.

Engineered Electrical Systems for Heavy Construction

GENERAL ELECTRIC



SHAKER TOWERS, CLEVELAND—One of the newest additions to the fashionable Shaker Heights section of Cleveland is this fine new apartment building, Shaker Towers. Situated adjacent to Shaker Square, the two-unit, twelve-story structure is convenient to express transportation to downtown Cleveland. It has facilities for 92 families, all in large outside suites. There is also a two-story attached garage, with space for 175 cars. The exterior of Shaker Towers, red brick trimmed with aluminum, covers a 1400-ton steel framework of Bethlehem Structural Shapes.

Architect: Joseph Ceruti; *General Contractor:* Roediger Construction Co.; *Structural Engineers:* Barber and Magee; *Steel Fabricator and Erector:* Builders Structural Steel Corp.—all of Cleveland.

BETHLEHEM STEEL

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  Tripod VIIb, extension legs, $52.25

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Robert F. Boger
Publisher

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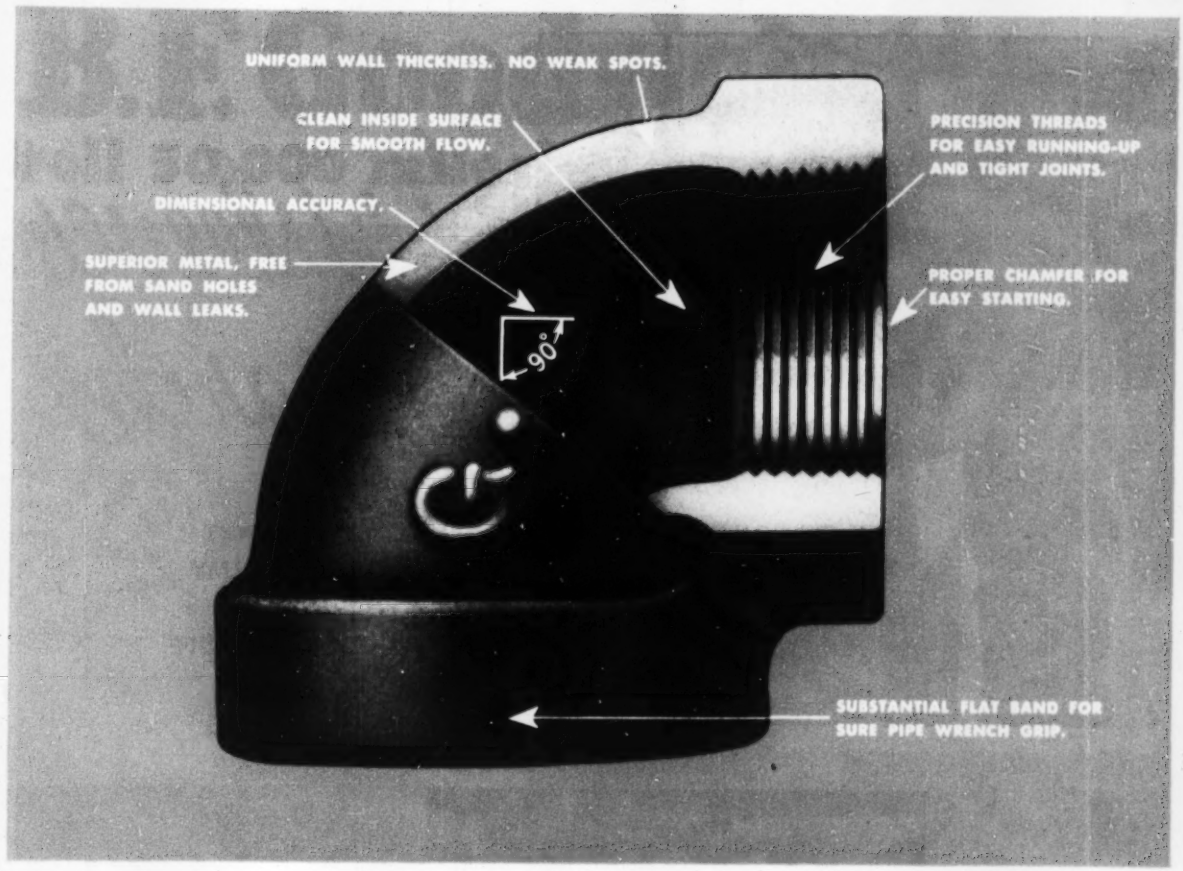
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PRECISION THREADS FOR EASY RUNNING-UP AND TIGHT JOINTS.
DIMENSIONAL ACCURACY.
SUPERIOR METAL, FREE FROM SAND HOLES AND WALL LEAKS.
PROPER CHAMFER FOR EASY STARTING.
90°
SUBSTANTIAL FLAT BAND FOR SURE PIPE WRENCH GRIP.

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Comparator checks accuracy of chamfer and threads to assure easy starting, running-up and tight joints.

Modern production methods and triple inspection insure the high quality of

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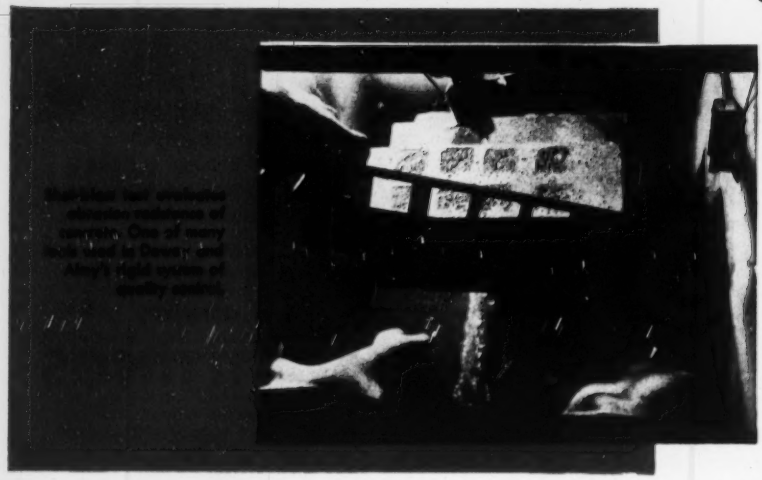
"Shirtsleeves" research

. . . BIG REASON WHY DEWEY AND ALMY CONSTRUCTION PRODUCTS PAY OFF *on the job*



You get dependable *performance* from Dewey and Almy construction products. You get it where it counts most — in the field, on the job. For each Dewey and Almy product is a result of years of down-to-earth research and field-tested quality controls.

The extensively equipped Dewey and Almy Cement and Concrete Laboratory is not an "ivory tower" . . . it is a *practical* proving ground that mirrors actual field conditions. And Dewey and Almy engineers are practical men with the *experience* to translate today's test results into specifications for tomorrow's improvements.

Get acquainted with Dewey and Almy products for the cement and concrete industries. See why engineers, architects and contractors all over the world rely on them for their most important projects.

DAREX AEA • world's most widely used brand of air entraining agent. Concrete made with DAREX AEA places easier, finishes faster and better, has finer surface texture, is many times more durable when exposed to freezing and thawing.

AIRALON • A ready-to-use air entraining agent and plasticizer that contains all the ingredients necessary to make a superior masonry cement.

DARASEAL • Createsa "membrane" film which keeps water in newly poured concrete for better and more complete curing.

GRINDING AIDS • Catalyzing grinding aids for cement mills that increase grinding rates of Type 1 cement 15 to 20%; of Type 2 cement 20 to 25%; of Type 3 cement 25 to 50%.

DARACONE • Long-lived silicone water repellent for above grade exterior masonry walls. Effectively combats efflorescence and leaks without affecting the appearance or "breathing" qualities of the masonry.

DEWEY and ALMY Chemical Company
Cambridge 40, Mass.

B.F.Goodrich tires
roll 50,000 miles on rocks and gravel

Clayton Baum points out Rock tire tread details to Owner M. C. Hubbell.

HAULING ore from mine to mill is the job of the M. C. Hubbell Company, Sahuarita, Arizona. Its units carry 18 to 21-ton loads over winding, hilly roads that cause constant weight shifting—over roads strewn with abrasive gravel and razor-sharp rock that cut and chew tires.

Uneven wear and premature failure are common and costly occurrences when tires operate under such severe conditions. But not the tires used by Hubbell. They are B. F. Goodrich tires, chosen after tests of all types of tires. BFG Rock tires have run better than 50,000 miles and are giving 30% more service than any tires ever used. No wonder this company's equipment rolls on B. F. Goodrich tires exclusively.

Owner M. C. Hubbell likes the tough, cut-resistant tread and husky, full-traction cleats of the Rock tire. The Rock tire is built with the patented nylon shock shield. Layers of strong, elastic nylon cords are built between the tread and cord body. Under impact, these cords stretch together to shield the tire body from shocks and bruises. You profit four ways from this exclusive nylon shock shield:

(1) more recappable tires and more hours of service per recap (2) more original hours of service (3) greater bruise resistance (4) less danger of tread separation. Double nylon shock shield in sizes 12.00 and larger.

It costs you no more to get the extra advantages and additional hours of service B. F. Goodrich tires give. See the B. F. Goodrich retailer for what's new in off-the-road tires. His address is listed under Tires in the Yellow Pages of your phone book.

Always specify B. F. Goodrich when you order new equipment.

RESEARCH KEEPS B.F.Goodrich FIRST IN RUBBER

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Please send name and address of my nearest retailer.

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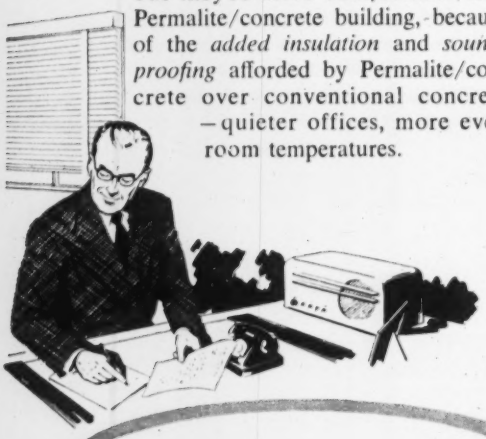
Everybody Benefits WITH Permalite

ARCHITECT– Permalite/concrete takes the handcuffs off the architect with its *light weight*–1/7 to 1/2 the weight of conventional concrete. Freed from this dead load, the architect has greater freedom in designing for required strength with minimum steel requirements.

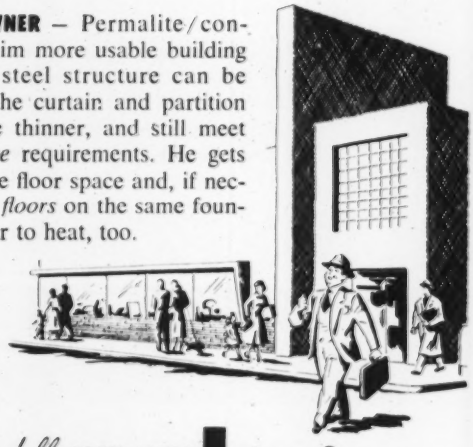
–AS THE AGGREGATE IN CONCRETE, FOR INSTANCE

BUILDER– Permalite/concrete takes a lot of weight off the builder's mind, too. *Lighter*, it's easier and quicker to handle, speeds construction. Advantages over other aggregates in the same weight class – uses less water, *shrinks less* on drying, resists thawing and freezing, has *lower absorption*.

TENANT– Tenants may not know why, but they're *more comfortable* in a Permalite/concrete building, because of the *added insulation* and *soundproofing* afforded by Permalite/concrete over conventional concrete –quieter offices, more even room temperatures.



BUILDING OWNER – Permalite/concrete gives him more usable building space. The steel structure can be lighter and the curtain and partition walls can be thinner, and still meet *fire-resistance* requirements. He gets more rentable floor space and, if necessary, *more floors* on the same foundation. Easier to heat, too.



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The 5 features below will be found only in the Lorain-50 "Series". They are important features because each one can add profit-dollars to your jobs. Whether your job calls for crawler or rubber-tires, you can fit the Lorain-50 to your needs . . . and be sure of getting the most value for your money. Let your nearby Thew-Lorain Distributor tell you why you get . . .

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1. **1-YARD SHOVEL — 30-TON CRANE (on rubber)**
There's more selection in the Lorain-50 "Series" of shovels-cranes. 7 different sizes and types of mountings to choose from . . . 5 front ends available. All models embody exclusive Lorain-50 design and quality features for profitable performance and long life.

2. **HYDRAULIC (fluid drive) COUPLING**
The only 1-yard class machine with Hydraulic Coupling as standard equipment. No shocks, no engine stall. Reduced wear and tear even on rock work . . . smoother, more accurate crane control.

3. **AIR CONTROLS—EASIER OPERATION**
Air does the work on the "50" crawler machine. Full air control of crawler steering and tread lock — air assist available for hoist, crowd and retract operations. Air steering standard on all rubber-tire models.

4. **CHOICE OF 4 CRAWLERS**
The right crawler can improve performance. You can fit the "50" with a crawler to match exactly any ground or working condition. Select from standard, all-purpose, extra-long, and extra-wide crawlers.

5. **2 TYPES ON RUBBER**
A big 30-ton, 30 m.p.h. Moto-Crane for big lifts and high-speed mobility. Also, available as a 30-ton, single-engine Self-Propelled crane on rubber. 4 travel speeds up to 7-1/2 m.p.h. in both directions.

THE THEW SHOVEL CO., LORAIN, OHIO

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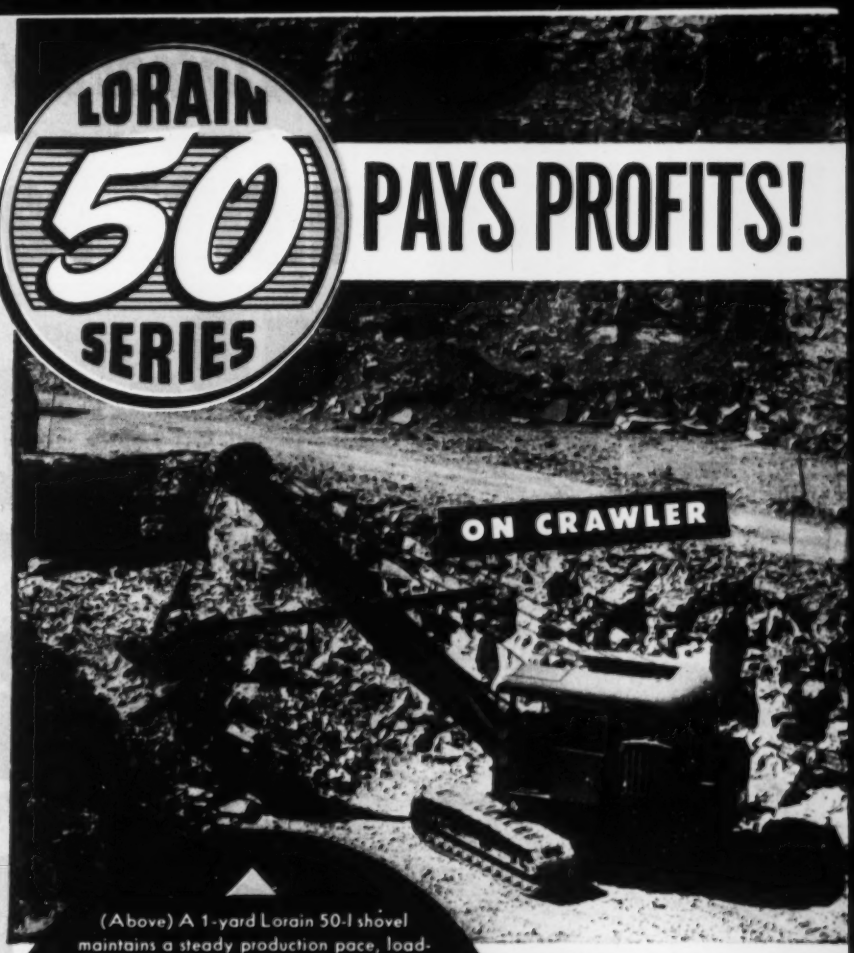
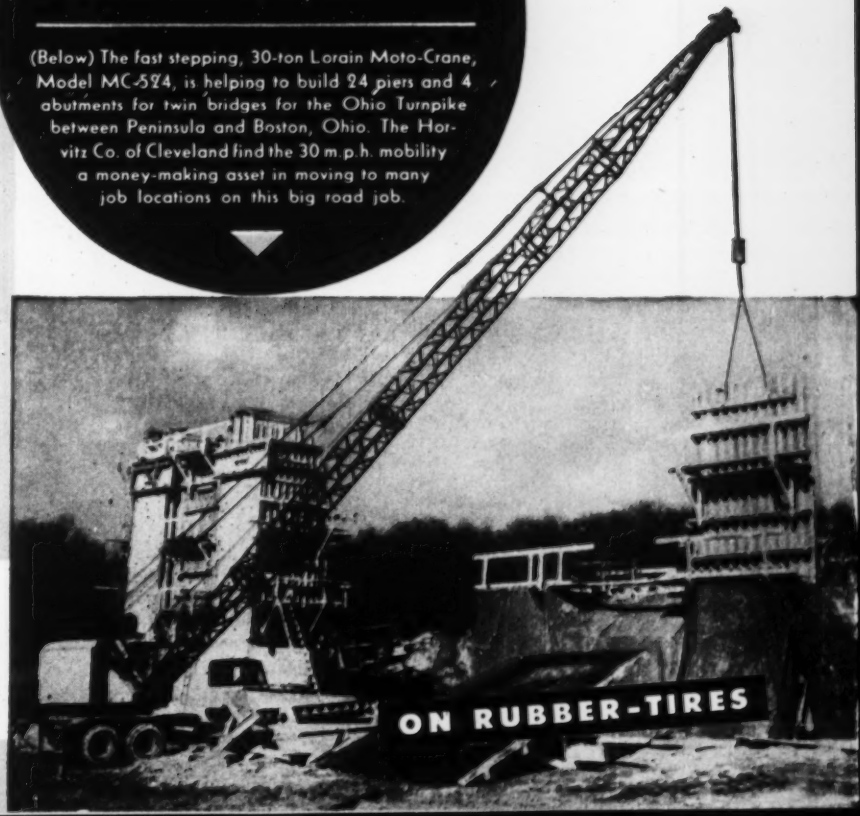


(Above) A 1-yard Lorain 50-I shovel maintains a steady production pace, loading out tough quarry rock for Foster, Alder and Wright of Fayetteville, Tenn. In rock work like this, the Lorain Hydraulic Coupling puts full engine power to work. Shocks and impacts can't be transferred into mechanism or cables.

(Below) The fast stepping, 30-ton Lorain Moto-Crane, Model MC-574, is helping to build 24 piers and 4 abutments for twin bridges for the Ohio Turnpike between Peninsula and Boston, Ohio. The Horvitz Co. of Cleveland find the 30 m.p.h. mobility a money-making asset in moving to many job locations on this big road job.



Southern Superintendent Says

"We load quicker, haul faster and Move More Dirt!"

INTERNATIONAL HARVESTER

INTERNATIONAL

POWER THAT PAYS

Atlanta airport expansion job is scene of new triumph for International power

When C. A. A. district headquarters decided to move to Atlanta, Georgia, the east-west runway at nearby Fulton County Airport had to be extended to 5,000-foot length.

One contractor, C. L. Rhodes of Decatur, Georgia, is doing the entire job, including cutting through a 39-foot hill and moving 350,000 cubic yards of sandy clay.

Rhodes' General Superintendent, R. N. Smith, tells how the work is going:

"We load quicker, haul faster and move more dirt with our Internationals than with any other crawlers.

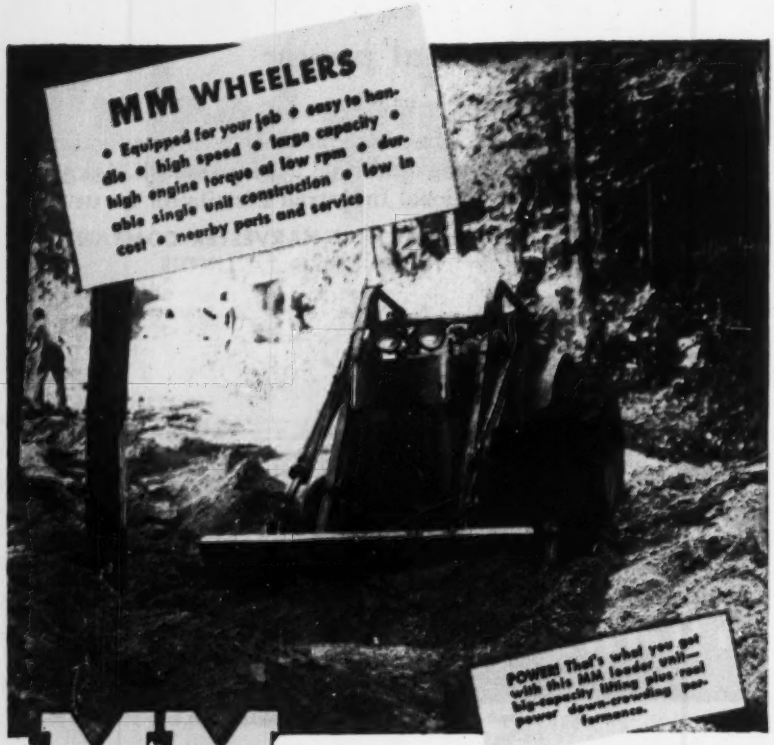
"Our operators push 'em to the limit all day long to get the job done ahead of schedule. The tractors get clean filters, fuel and grease, and hard work—more hard work than is reasonable—and they take it month after month without a let down!"

That's what International owners everywhere are finding out. Find out for yourself. Ask your International Industrial Distributor for details.

INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS

JOHNNY-ON-THE-SPOT SERVICE. A fast field service team from International's Atlanta distributor rolls up to the job site. Service like this from *your* International distributor is as near as your nearest telephone, to cut down downtime and keep your equipment rolling!

HIGH HEAPING FOR HIGH FLYING. Here are three of the five International crawlers that are furnishing power to extend runways at Fulton County Airport to increase the field's traffic potential.


MM WHEELERS
• Equipped for your job • easy to handle • high speed • large capacity • high engine torque at low rpm • durable single unit construction • low in cost • nearby parts and service
POWER! That's what you get with this MM loader unit—big-capacity lifting plus real power down-crowding performance.

MINNEAPOLIS-MOLINE MM MODERN MACHINERY

WHEELERS

COST LESS TO OWN . . . LESS TO OPERATE . . . and, they're HEAVY DUTY . . . ALL THE WAY!

You get ALL the benefits of Modern Manufacture when you specify MM Wheelers. Standardized, heavy duty parts and modern assembly procedures cost you less to begin with. Quality control in parts and assembly offers maximum precision for longer service on the job. And, those same efficient production methods permit special MM design features that give *better* loading performance—*greater* loading capacity.

Every day, more and more careful buyers are getting the facts from MM distributors . . . *buying* MM Wheelers for lower *first* cost—lower *operating* costs.

MINNEAPOLIS-MOLINE
MINNEAPOLIS 1, MINNESOTA

READER COMMENT

Case of re-identification

SIR: Please refer to Page 24 of the March 19, 1953 issue of the Engineering News-Record.

The article entitled "Potential demand for big-city office space is running high" has two pictures, on Page 24. Apparently the caption on these pictures is reversed. The picture in the upper righthand corner is of the Standard Federal Savings and Loan Association Office Building in Los Angeles, and was fabricated and erected by the Bethlehem Pacific Coast Steel Corporation. Texas may complain if California takes credit for the larger of the two buildings.

M. H. FRINCKE
Manager of Erection
Bethlehem Pacific Coast Corp.
Alameda, Calif.

New vs. existing groups

Sir: Your editorial in the Mar. 5 issue points out to sanitary engineers the wisdom of working within existing professional organizations rather than starting a new one such as the proposed American Academy of Sanitary Engineers. We concur with your opinions and suggest further that your advice be broadened to cover other fields of engineering in which the members are restless and impatient within existing societies.

However, the reasons given in your editorial as advanced by the proponents of the new sanitary organization are generally valid and are identical with those that are causing dissatisfaction with the present situation in fields other than sanitary. Unless the existing national societies such as ASCE give greater attention to this problem than has been evidenced heretofore it seems inevitable that more and more so called "splinter" societies will be formed.

In our opinion, if the demand for new societies is to be suppressed, then the existing national societies must grant greater autonomy to groups, such as ASCE's technical divisions, that are now set up within the framework of these societies. ASCE has taken a forward step in this direction by approving technical division meetings separate from meetings of the whole society but other measures are needed too. Lesser detailed control by the parent society in such matters for example as expenditures within an approved budget and holding of committee meetings is neces-

(*Continued on page 14*)

Rolling Metal Doors

Provide Removable Dividing Wall in School Gymnasium!

Rolling Metal Doors with movable mullions prove to be ideal for a removable dividing wall in the gymnasium of a modern high school. In this particular installation, four power operated rolling doors are employed in the main floor area . . . two more power operated rolling doors are employed to divide the balcony on either side of the gymnasium floor, thus dividing the gymnasium into two entirely separate parts—which is desirable on many occasions in present-day usage. All visible parts of the six rolling doors, were manufactured in aluminum. Similar installations can be made in stainless steel, or in enamel coated galvanized steel which may be painted after erection to harmonize with a general decorative scheme. For high quality Rolling Metal Doors, and Underwriters' Labeled Rolling Steel Fire Doors and window Shutters, see Mahon's Insert in Sweet's Files, or write for Catalog G-53. Inquiries relative to special purpose doors, and installations such as the one illustrated here, should be addressed to the home office in Detroit for prompt attention.

The six aluminum rolling doors illustrated here, which form a dividing wall in a school gymnasium, are electrically controlled by push-buttons on a single panel. When the doors are fully opened, the mullions between doors on the main floor are moved out of the way by means of an overhead track and nested at either side, leaving the entire gymnasium floor clear.

THE R. C. MAHON COMPANY

Detroit 34, Michigan • Chicago 4, Illinois • Representatives in all Principal Cities

Manufacturers of Rolling Steel Doors, Grilles, and Automatic Closing Underwriters' Labeled Rolling Steel Doors and Fire Shutters; Insulated Metal Walls and Wall Panels; Steel Deck for Roofs, Partitions, and Permanent Concrete Floor Forms.

ROLLING STEEL DOORS, SHUTTERS AND GRILLES TO MEET EVERY REQUIREMENT

Interior view of Gymnasium in the new Birmingham High School, Birmingham, Michigan. Swanson Associates, Bloomfield Hills, Michigan, Architects. Cunningham-Limp Company, Detroit, Michigan, General Contractors.

MAHON

SPEED UP YOUR

ACROW SHORES Set in Seconds

ACROWS are truly one-man shores. One man can set an ACROW Shore accurately in a matter of seconds by following three simple steps:

1) Lift inner tube to approximate height desired . . .

2) Insert steel pin in nearest hole . . .

3) Turn collar handle for final adjustment to the smallest fraction of an inch.

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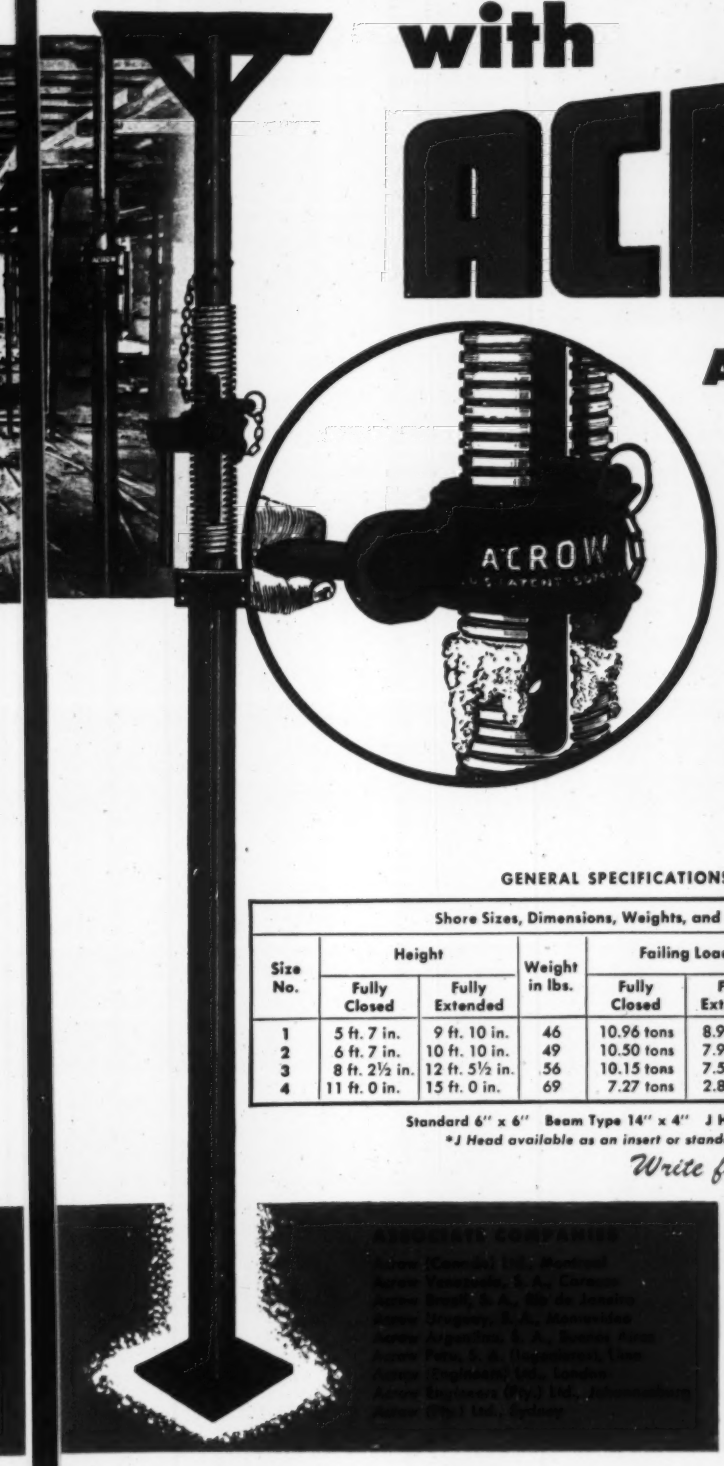

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GENERAL SPECIFICATIONS

Shore Sizes, Dimensions, Weights, and Capacities

Size No.	Height		Weight in lbs.	Failing Load		Recommended Safe Working Load	
	Fully Closed	Fully Extended		Fully Closed	Fully Extended	Fully Closed	Fully Extended
1	5 ft. 7 in.	9 ft. 10 in.	46	10.96 tons	8.97 tons	8210 lbs.	6720 lbs.
2	6 ft. 7 in.	10 ft. 10 in.	49	10.50 tons	7.90 tons	7840 lbs.	5975 lbs.
3	8 ft. 2½ in.	12 ft. 5½ in.	56	10.15 tons	7.55 tons	7490 lbs.	5600 lbs.
4	11 ft. 0 in.	15 ft. 0 in.	69	7.27 tons	2.89 tons	5225 lbs.	2050 lbs.

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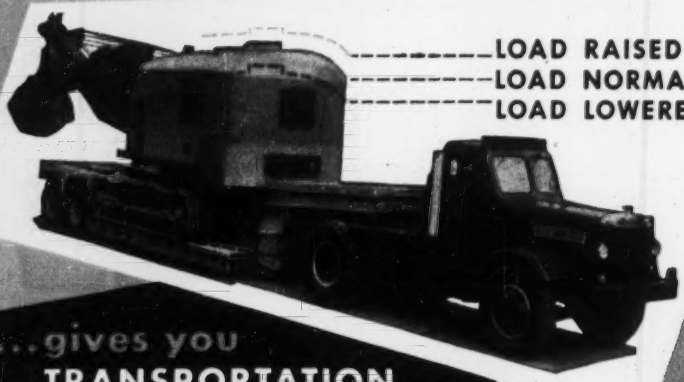

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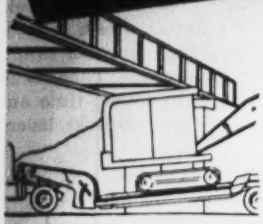

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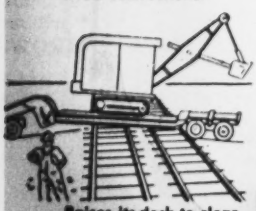

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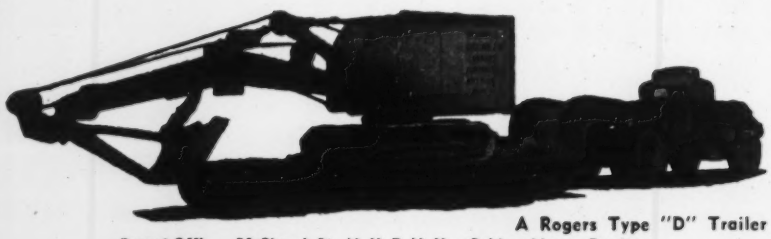

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READER COMMENT

sary if the technical divisions are to become effective groups that meet the needs of the members.

ASCE, faced with a growing accumulation of unpublished technical papers, is to be commended for a new publications policy just adopted which should solve the major publications problem of that society (ENR Mar. 19, p. 27).

Adequate media for publication of technical papers are desperately needed. The lack of such media results in long delays in publication of worthy papers covering new developments that should be made available to the profession. To this publications problem there is no apparent easy answer but it is undoubtedly one of the major causes behind the movements for new societies.

There is no reason why professional groups cannot achieve all of the benefits they might expect to receive from a separate society within the existing national societies. Furthermore, these going societies have much in addition to offer such as established prestige and functioning organizations built up through long years of professional service. It would seem therefore that members of groups now dissatisfied with their status in existing organizations should make a real effort to work out a plan in each case to change this status within the existing society. It is time to start a new society only if the group members find the appropriate existing society unwilling to give them the recognition and responsibility within the existing society that the group must have to achieve its aims.

ALBERT S. FRY
Knoxville, Tenn.

CALENDAR

Connecticut Development Commission, annual conference, Hartford, Conn., Apr. 19-22.

N. Y. State Society of Professional Engineers, Hotel New Yorker, N. Y. City, Apr. 23-25.

National Engineering Conference, American Institute of Steel Construction, Engineering Societies Bldg., Detroit, Mich., Apr. 22-23.

Conference on residential air-conditioning, Packard Auditorium, Lehigh University, Bethlehem, Pa., Apr. 24-25.

Concrete Reinforcing Steel Institute, annual meeting, the Carolina Hotel, Pinehurst, N. C., Apr. 27-May 2.

Pacific N. W. Conference, ASCE, Seattle, Wash., Apr. 30-May 2.

American Water Works Association, annual meeting, Municipal Auditorium, Grand Rapids, Mich., May 10-15.

Conference on instrumentation in water, sewage and industrial waste treatment, Manhattan College, N. Y. City, May 14.

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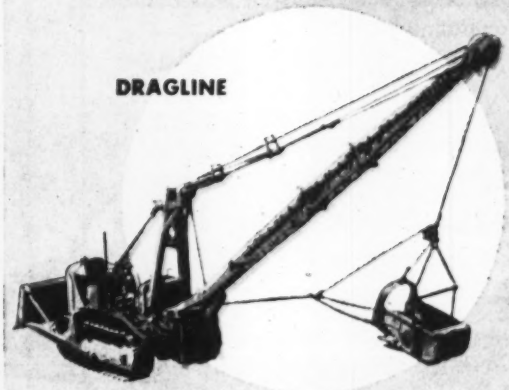

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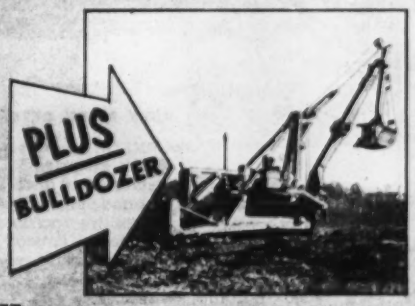

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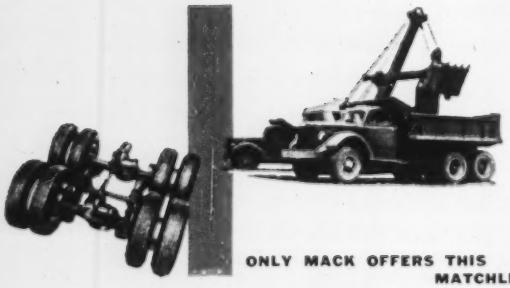

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THE CONSTRUCTION WEEK

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• **TV hurts schoolbuilding?**—Television—alternately cursed and praised by theater and motion-picture industries—may give construction men cause for thought too. While initial installation of TV stations may call for construction, such installations might also cut out future work on schools.

W. W. Kemmerer, president of the University of Houston, brought up the point. Said he:

"The university's new station, to begin operations about the end of May, will save possibly $10 million in construction of classroom buildings, by assembling students in one large assembly hall for lessons."

• **It was a tough fight**—It took nearly a year, while the politicians fought it out—but E. L. Schmidt, a career engineer employee of Pennsylvania's Highway Department has finally been made Secretary of Highways.

Key to the long battle was the fact that Schmidt—never a politician, and an outspoken man—was named for the highly controversial post by Republican Governor John Fine. But Democrats control enough of the two-thirds senate vote needed for confirmation. After a gruelling public hearing, the engineer was confirmed unanimously. Some Schmidt comments:

The highway department has too many officers, not enough soldiers; private contractors appeared to be in collusion when bids on state work jumped 58%; private asphalt suppliers were too expensive and too undependable; only roads built within the last five or six years can take present-day traffic loads; Pennsylvania is "wedged between states that have gone hog-wild" on weights for trucks.

• **Extra hands for roads**—Indiana's Governor George N. Craig was responsible for the slightly odd statement that for the first time, engineering students from Hoosier colleges would be employed for summer highway work "without thought of political affiliation."

Wisconsin's highway commission will offer on-the-job training to 50 young men, at $200 a month.

• **Mortgage rate rise out?**—That raise in interest rates on GI and FHA mortgages—so long pushed by bankers and fought by government—now seems certain.

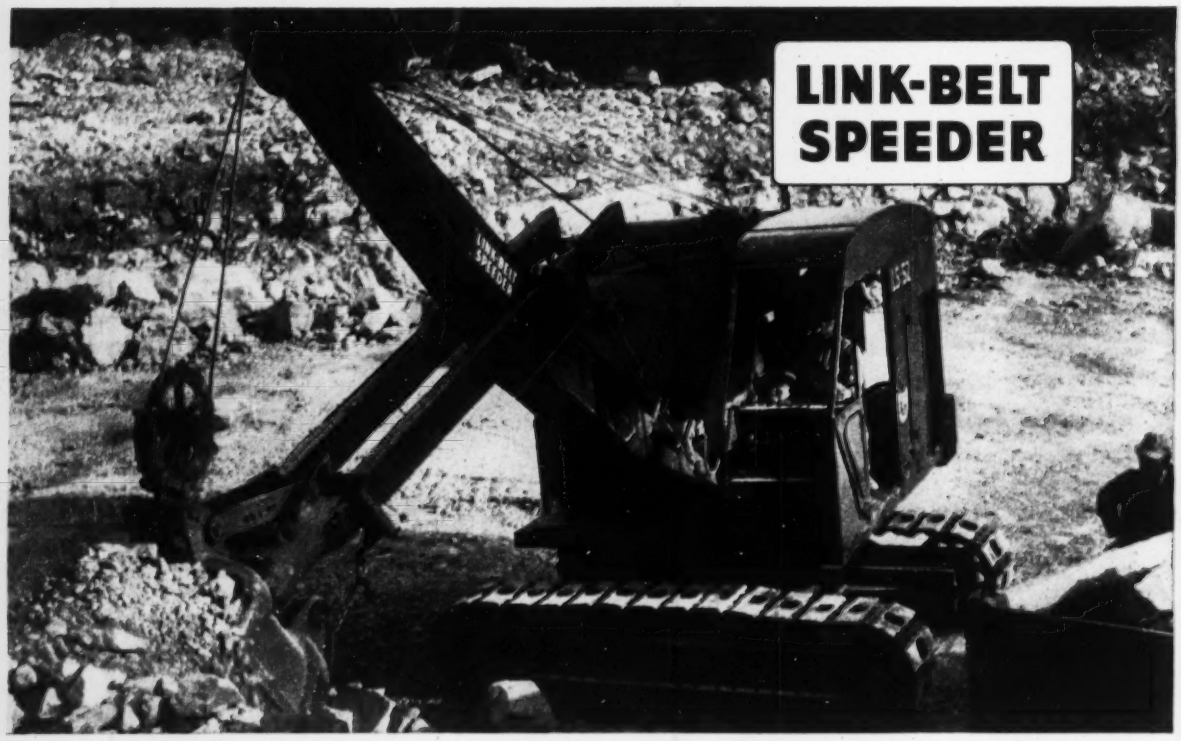
The Treasury finally came out with a long-term bond issue that the bond market has been anticipating ever since Republicans took over. As predicted by a good many people, the new issue bears an interest rate of 3¼%—highest in about 20 years.

Financial men say it means the Treasury is competing with other borrowers for long-term money—which is likely to boost the cost of borrowing.

The reason for the issue is that the Treasury wants to transfer more of the public debt out of short-term and into long-term issues, where it will be less of an inflationary influence. Only $1 billion will be offered, to see how the investors react.

Before you buy:

Talk to operators!



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HOWARD EARL DEGREENIA, Westfield, Mass. — "It doesn't jerk like other rigs I've run."

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WASHINGTON OBSERVER

Eisenhower's team is beginning to act on hot construction issues. Last week it took a solid stand for higher interest rates. Coming next are policy decisions on FHA interest rates, more money for FNMA and VA direct loans, continuation of rent controls.

•

The cost of borrowing will go up for both residential and industrial construction, stemming from the new 30-year government bond issue. The interest rate of 3¼% is the highest in 20 years, and is designed to compete with private borrowers for long-term money.

On FHA rates, Housing Administrator Cole wants a quick decision. The best guess is they will be increased, probably to 4½%.

On VA loans, it won't be so easy. Congress seems to lean toward continuing direct 4% loans to veterans. It's on a political hook, and held there by pressure from veterans' organizations.

•

The new government bond adds to an already tight money market. For months, bond issues floated by corporations have been competing for the limited amount of money. This is why interest rates have been going up. The new government issue gives the market another jog.

The new long-term bond is a strong psychological push for higher rates. And that is significant, even in the face of evidence that the $1.1 billion in 3¼% could be soaked up by an exchange of the same amount of F and G bonds. The effects will still show up in construction financing (see also p. 17).

•

The Administration has to do something about Fannie Mae. The agency has stopped buying mortgages, except for those in defense areas. As things stand now, Fannie Mae can't act as a market for VA and FHA loans. The President would have to recommend, and Congress vote more money for Fannie Mae's sock if secondary mortgage buying is to be maintained—and the 4% veterans interest rate kept.

•

Rent controls in defense areas are likely to be kept another year. But sentiment in Congress makes it an even bet other rent controls will be dropped the end of this month. Possibly, the Senate could force a "temporary" extender for a few months.

•

A big construction program to offset any business slide has been promised in specific terms. Commerce Secretary Weeks told a Boston audience last week: "There is a great unfilled demand for the construction of bridges, highways, public works, schools, and hospitals. The new Administration would not hesitate to use such strong measures as might be required in a real emergency."

•

New Department of Health, Education, and Welfare isn't going to mean many changes in construction programs there. Personnel will get some shakeup. Note that Education Commissioner McGrath is out, but Public Health chief Scheele will stay.

•

Eisenhower is giving his backing to New York's bid to build the U.S. portion of the St. Lawrence power project. His support isn't open, but he has given Senate Republicans the word that he will go along.

Federal Power Commission okay of the plan should be coming soon, now. Next step is for the commission to get its examiners' decision, then vote. With the power angle settled, Congress will get more serious about deciding the controversial seaway issue. Hearings on the seaway began this week.

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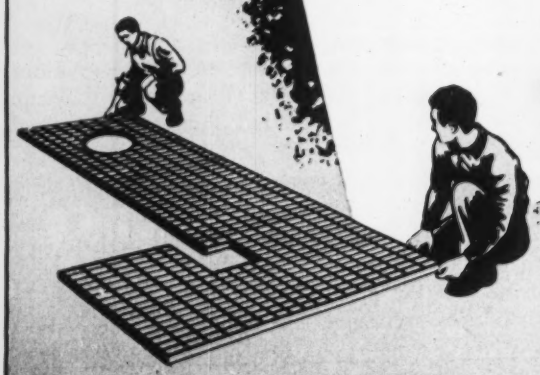


Congress schedules hearings on construction legislation

St. Lawrence Seaway, bid-shopping, federal-state highway policies up for consideration; budget cutting going slowly.

Construction legislation took a more prominent place on the agenda in Congress this week with the launching of hearings on such subjects as authorization of the St. Lawrence Seaway, banning of bid-shopping and federal-state highway financing policies.

On budget cutting, congressmen are being slowed by Administration delay in getting out revised request for money. Thus far, Congress has considered only a few scattered bills calling for new projects. And, chances for authorization of new starts on major projects at this session are growing slimmer.

About the best that can be expected, construction-wise, are funds to continue projects already under way. Even in this category, it won't be easy—taking as an example the difficulty in getting authorization for Eklutna hydroelectric project in Alaska raised from $20 million to $35 million.

Here's a rundown on propects for construction legislation:

• **St. Lawrence Seaway**—The project will be reported favorably by Senate Foreign Relations Committee, but chances of favorable action on floor of Senate or House depend on how late in the session it is taken up. It could get pushed aside in the rush for adjournment.

• **Bid-shopping**—Bill to ban bid-shopping probably will be reported favorably by Senate Judiciary Committee. It could pass Senate if brought up before final rush, but it would have trouble getting through House this session.

• **Federal-state highway hearings**—House Public Works Subcommittee on roads opened hearings on highway financing this week. The big issue is whether the United States gives up gas taxes to the states and cuts back grants from the Bureau of Public Roads. Chairman J. Harry McGregor expects the hearings will run through May.

• **Hell's Canyon Dam**—Rep. Gracie Pfost, who won her seat in Congress campaigning in favor of this controversial project, will introduce a bill calling for its authorization. But she will have difficulty even getting hearings on it at this session.

• **Bridge Canyon Dam**—Bill has been introduced by Sen. Malone, but with no chance of authorization this session.

• **Reclamation projects**—No large reclamation projects will be authorized, but two or three small irrigaton projects will be not over $20-million—may be okayed.

• **Public works**—The House Public Works Committee increased the authorization for three Pacific Northwest projects by $75 million and has labeled these its only major project authorizations for the session. These projects, yet to be approved on the House floor, are the Detroit dam and reservoir, the Lookout Point dam and reservoir, and The Dalles lock and dam—all multi-purpose projects.

• **Brake on appropriations**—Appropriatons Subcommittee chairmen have announced plans to delay funds for starting many projects that have been authorized and inviting continuing funds. They hope to whittle these as thin as possible. These hearings have been delayed waiting for revised figures, but by the end of the month, Speaker Martin hopes to bring appropriations bills to the House floor at rate of two bills a week or better.

Civil Works Subcommittee Chairman Glenn Davis predicts that many of the 13 flood control and navigation projects due to be started this year will be passed over and that his subcommittee will be able to make a big dent in last year's $562-million appropriation for civil works. The Army Engineers are due to begin testifying before the subcommittee this week on river and harbors and flood control requests.

Chairman Ben Jensen of the House Interior Appropriations Subcommittee wound up hearings this week without waiting until all the revised budget figures were in. Reclamation figures were still missing but with an overall cut of $48.5 million in construction funds below the Truman budget, Chairman Jensen figures he has enough information to start writing the bill. He hopes to get it to the full House before the end of the month and promised to deepen the cuts made by the Administration. Biggest casualty in the Eisenhower cutbacks was in Alaska, where $22 million was chopped out of construction funds for the Alaskan railroad, road construction and public works.

The Subcommittee on Independent Agencies is taking a hard look at three TVA requests: New steam electric power plant, $30 million; new unit in Kingston steam electric plant, $9 million; and new unit in John Sevier steam electric plant, $8.8 million. There will be little authorized this year for federal highway construction. No hearings have been held yet on the Atomic Energy Commission's request for $1.9 billion for new facilities, but here is one place that Congress will tread lightly in budget-cutting—will continue to treat AEC request as a "sacred cow" as have previous Congresses.

Investors kill Mackinac Bridge plan

Michigan's 30-year-old plan for a bridge at the Straits of Mackinac has returned to the dream stage again. Until a few weeks ago it seemed that the project would become a reality (ENR March 12, p. 25, March 26, p. 151). But the bond market's lack of interest, coupled with the Michigan legislature's refusal to appropriate funds to maintain the bridge, stopped the project cold.

According to plans drawn up at a cost to the taxpayers of $175,000, the bridge would have been about five miles long and would have run from Mackinaw City on the lower peninsula to a point near St. Ignace on the upper peninsula. The $100-million structure was to be financed by the sale of revenue bonds.

Bonding houses and insurance firms rejected the proposition on two counts: (1) They wanted to know how a bridge could make money if a ferry line could not. The state-operated ferry line now shuttling across the straits has been losing money at a rate in excess of $500,000 a year for the

last four years. (2) Prospective investors wanted the state to show its good faith by allocating annually $500,000 for bridge operation and maintenance. Upper Peninsula legislators introduced a bill to pledge that amount of money yearly. Shortly after, however, the same legislators introduced another bill appropriating $6 million to build a new ferry to add to the line, a move that made it likely that prospective investors will continue to shy away from the project.

Engineer bargaining unit declines ESA affiliation

Southern California Professional Engineering Assn. has decided against affiliation with Engineers and Scientists of America. It is one of the collective bargaining groups that were expected to join ESA during the national organization's current recruiting drive (ENR March 5, p. 26).

In reporting its decision to the membership, SCPEA's executive board said that while "unity in the engineering profession is in itself laudable," it preferred not to lose autonomy by joining a national group whose methods might disagree with SCPEA's.

It was reported that one factor in the decision was an alleged tendency of ESA toward militant organization. Doubt over membership standards also was cited as a reason for declining ESA membership. And, finally, the board took the position that ESA's $4 per capita tax could be better be spent locally.

SCPEA has some 1,700 members with Douglas Aircraft Corp., Southern California Gas Co. and Los Angeles Department of Water and Power.

Portland-Vancouver span financing bill passed

Oregon has completed legislative action on a bill authorizing tolls on the interstate bridge crossing the Columbia River between Portland and Vancouver, Wash., to pay for a new $12-million parallel span.

Tolls would be restored to the old bridge when the new link is opened for traffic. The two would be operated as one-way traffic carriers in conjunction with elaborate freeway approaches on both sides of the river.

Toll charges have not been determined by the Oregon Highway Commission and the Washington State Toll Bridge Authority, which jointly sponsored legislation in their respective states to authorize the project. Oregon Highway Engineer R. H. Baldock has indicated, however, a 15-cent passenger car and 50-cent truck fee was expected to amortize the facility in nine years.

Construction firm on H-bomb project sued over joint venture agreement

The government is charging a contractor on AEC's Savannah River H-bomb project with having made an undisclosed joint venture agreement in violation of his contract and federal law.

The joint venture agreement is the key point at issue in a federal court suit brought in South Carolina in which government lawyers are seeking return of $1.9 million in AEC money paid to construct a housing development.

The contract originally called for dormitories near Barnwell, Williston, Allendale and Beech Island—housing for 7,500 single workers. However, it was realized later that not nearly that many single workers were employed at the plant. In March, 1952, the Beech Island development was cancelled.

The government's case was filed last week in the name of E. I. du Pont de Nemours Co., prime AEC contractor on a cost plus $1 basis, against the Lyles & Lang Construction Co., which subcontracted the housing construction from du Pont.

Lyles & Lang started the round of litigation by suing du Pont for around $1.3 million for unpaid costs of construction, arguing that part of the contract was terminated illegally and that it is entitled to costs, plus 20%, under the agreement.

The government denies that any money is due Lyles & Lang. On the contrary, it sets up a counterclaim for money already paid the construction firm.

According to the government, neither du Pont nor AEC knew that Lyles & Lang had submitted its bid on behalf of a group of contracting firms. It contends that Lyles & Lang Co.'s joint venture agreement violated the contract and federal law and unreasonably hiked costs.

Payment for personal time and services of the principal bidders was to be excluded in figuring up costs under the contract, according to the government. Since Lyles & Lang were the only disclosed principals, the contract did not specifically exclude such costs for the services and time of the other members of the joint venture group.

Also, the government contends that, through dealing with each other, members of the joint venture were able to run up excessive costs in performing the contract, all unknown to AEC and du Pont at the time.

The government filed an alternative proposal for consideration if the full $1.9-million counterclaim is turned down: It wants to get back the alleged overpayment Lyles & Lang got by reason of the joint venture arrangement for performing the contract. That means making a special audit to determine exact net costs allowable under the contract.

The federal law involved is the so-called "false claims statute," which protects the government against the filing of erroneous or false claims and permits it to collect money paid out on such claims.

Water survey to consider $100-million tunnel plan

The feasibility of plans to divert 177,000 acre-ft of water annually from the Western Slope through a $100-million tunnel under the Continental Divide to Denver's growing metropolitan area will be among the issues to be determined in a survey of Colorado's water resources.

The state legislature voted $100,000 last month to make the survey, the first in Colorado history. After the initial meeting of the survey committee April 1, Secretary Ivan C. Crawford said a report of findings could be submitted within six months.

Denver officials have said they must augment the city's present supply of water if the present growth of the area is to continue beyond 1960. That problem is the principal reason for the survey. The study also will investigate the potential industrial uses for water on the Western Slope, which has few industries at present.

Seven division engineers of the state engineer's office and an engineering research group will assist in making the survey.

Gano Dunn dies; headed White Engineering Corp.

Gano Dunn, 83, president of the J. G. White Engineering Corp. of New York City since 1913, died in New York April 10. Educated as an electrical engineer, his interests and activities expanded into the field of construction in 1911 when he joined the White organization as vice-president in charge of engineering and construction. Two years later he was named president of the company.

Under Mr. Dunn's direction the activities of the company were greatly expanded, becoming international in character soon after World War I. In recent years Mr. Dunn had given much of his time to national matters of interest to engineers and to educational work.

12-year $568-million road program approved by Maryland legislature

The Maryland legislature has approved a $568-million highway construction program to provide 3,450 mi of new and reconstructed roads in the next 12 years.

To finance the program, the state legislature provided for: (a.) An increase in the gas tax from five to six cents effective June 1, (b.) issuance of bonds up to $330 million, and (c.) an increase in motor vehicle registration fees ($15 to $20 for passenger cars up to 3,700 lb. and $23 to $30 for heavier cars).

The general assembly decided to break up the program into three four-year phases, with a legislative review required at the end of each period. Although the 12-year program has been mapped out for some time (ENR Nov. 20, 1952, p. 27), the state highway commission was not certain this week which proposed projects would be started first.

However, the commission-planning to spend $61 million annually over the next four years—indicated that the first four-year phase would include these major construction projects:

- One pair of lanes for the proposed Eastern Shore Expressway from the new Chesapeake Bay Bridge to the Delaware line, connecting with the New Jersey Turnpike.
- Major parts of the proposed dual roadway circumferential route around Baltimore.
- Making U.S. Route 301 a dual highway from the Baltimore area to the Potomac.
- The Washington-Annapolis dual route as far east as U.S. Route 301.
- Extension northward of one pair of lanes for the future Baltimore-Harrisburg Expressway.
- Widening of U.S. Route 11 to a dual highway and similar work on sections of U.S. Route 15.
- Work on the Washington-Frederick pike and on U. S. Route 40 in the west.

The authorized program includes many other important projects which might be substituted for construction work at present forecast in the first four-year phase. Also, the program provides for reconstruction of some 2,200 mi of secondary and farm-to-market roads.

The mileage breakdown on the $568-million, 12-year program is as follows: new primary roads, 285 mi; improvements to primary roads, 1,240 mi—bringing the state highway system up to 2,116 mi; and new secondary roads, 7 mi—bringing the state's total to 5,124; and reconstruction of secondary and farm-to-market roads, 2,200 mi.

Besides the new financing program approved by the legislature, about $29 million from old bond issues is available for work now under way or projected.

The State Roads Commisison, after drawing up the 12-year program, recommended four new toll highways, three of which are included in the program. However, the legislature failed to adopt toll highway legislation at this session.

New FHA chief

Leader in Baltimore Plan, Guy Hollyday, nominated

Guy T. O. Hollyday, who has been newly nominated to head the Federal Housing Administration, while in his new post intends to make use of his experience as one of the leaders of the Baltimore Plan.

A native of Baltimore, he has been active in real estate and realty banking since his graduation from Johns Hopkins University in 1914, except for a period during World War I when he served as a second lieutenant in the Cavalry.

At present he is the president of the Title Guarantee Co. of Baltimore and an officer or director of five other banking and mortgage firms.

• Baltimore plan—The nominee is one of the leading supporters of the Baltimore plan for slum rehabilitation by means of housing law enforcement.

So strongly does he feel about the plan that he headed an organization—Fight Blight, Inc.—to raise funds to make possible the taking of a moving picture showing the operation of the plan. The University of Chicago put up one-half of the funds. The motion picture has been released.

Hollyday also is quite proud that the organization received a grant of $10,000 from the fund for Adult Education of the Ford Foundation for the writing of a book on the plan.

• Future plans—Interviewed by ENGINEERING NEWS-RECORD at the moment when he was told that President Eisenhower had sent his name to the Senate for confirmation as FHA administrator, Hollyday was reluctant to reveal any specific plans he has for the government post.

"Until the Senate confirms me," he said, "I am in the position of a willing bride without a bridegroom."

He thought that his experience in slum rehabilitation work would have a big effect upon the senators.

"I will try to use my FHA position to further this work," Hollyday said.

He mentioned those sections of the housing act—Title I and Title 203B (a)—which can be helpful in financing rehabilitation of existing housing.

ENR photo by Compton.

GUY T. O. HOLLYDAY interviewed just after FHA nomination

Colorado considers tunnel under Continental Divide

The Colorado state highway department has been directed to study the feasibility of drilling a toll tunnel under the Continental Divide west of Denver. A report, including cost estimates, is to be submitted to the state legislature by next January.

The bill authorizing the survey gives the state highway department the option of using any feasible route which would serve both U.S. Highways 6 and 40. Four possible locations for the tunnel mentioned in the legislative directive.

Hampton Roads project approved by Army

The Virginia state highway department's proposed $60-million Hampton Roads bridge-tunnel project, linking the Willoughby Spit section of Norfolk and Phoebus on the lower Virginia peninsula, has received Army approval.

The project will involve construction of a bridge and causeway to span the shallow sections of water and a tunnel located under the main ship lane.

Better transportability of equipment needed to reduce roadbuilding costs

Earthmoving industry conference considers problems raised by state overload and size regulations

By R. H. Dodds
Associate Editor

Roadbuilding economy through improved transportability and design of equipment was the principal theme of an earthmoving industry conference in Peoria, Ill., last week, sponsored by the Central Illinois Section of the Society of Automotive Engineers.

Citing well-known statistics on the growing deficiency in highways, R. S. Stevenson, executive vice-president of Allis-Chalmers Manufacturing Co. of Milwaukee, contended that national expenditure for roads should be $10 billion instead of present $4 billion.

Chances for an adequate roadbuilding effort will be enhanced, Stevenson declared, in the conference's keynote address, if automotive engineers develop still better machines—ones that will move dirt cheaper.

• **Improved transportability**—A promising approach to less expensive road construction is to be found in improving the transportability of earthmoving equipment, the conference was told. H. W. Rockwell, chief engineer at the Cedar Rapids works of Allis-Chalmers, discussed ways in which both manufacturers and contractors are making it possible for big machines to travel over the highways. These means include easier demountability and tricky arrangements for low-bed trailer loading.

But, there still is much to be done to improve transportability, Rockwell said. It is not uncommon to find road bids in which the contractor has provided $50,000 to $100,000 for truck and rail transportation. This sometimes figures as high as $3,000 per mile of contracted highway. He was of the opinion that state overload and oversize restrictions should be relaxed substantially in favor of wheeled roadbuilding equipment, which then could move from job to job under its own power. The damage to existing roads would be small compared with the saving in new construction costs, Rockwell contended.

• **Overload problems discussed**—Rockwell recommended, furthermore, that in tests to determine the effects of overloads on roads, highway officials should include a vehicle with large off-the-road low-pressure tires.

In response, H. W. Harrison of the Illinois State Highway Department said that the structures on many highways can take only a slight overload so there are physical obstacles to significant relaxations of restrictions. He also doubted whether a legislature would give any one industry such favorable treatment.

Jack Hartman, Peoria contractor, then said that it looks as if the industry is stuck with highway weight and size restrictions so it should adapt itself to them. He noted that transportability frequently is the determining factor in his firm's equipment-buying decisions.

• **Design considerations**—Another approach to less costly roadwork urged by several is that machines be designed more effectively.

W. T. Bean, Detroit research consultant, suggested wider use of strain gages for developing more effective data for making a part stronger without weight increase, or for making it lighter without strength loss.

One revolutionary idea for earthmoving machinery (and for all wheeled operations)—the wheel driven by its own electric motor—was discussed by K. K. Heiple, chief field engineer for R. G. LeTourneau Co., Peoria. The idea first was introduced by Heiple's firm in 1950, when an experimental prime mover with motors on all four wheels was shown.

Having undergone tests in several vehicles during the last three years, the electric wheel now is out of the test yard stage but factory production still is in the future, Heiple declared.

• **Standardization project** — Another equipment development is standardization among tractor makes as demonstrated by a Corps of Engineers project. Drawbar details, bulldozer trunnions, winch mountings, and other external features of one size-class of three tractor makes have been standardized, according to a report by J. E. Sass, assistant engineer at Caterpillar Tractor Co. Color slides showed the respective tractors and associated equipment, painted their characteristic red, orange or yellow, mounted on other makes for which they were not originally intended. Photos had been taken at Fort Belvoir, Va.

Turning to business matters, the conference heard William Blackie, Caterpillar vice-president, discuss the "emergence of foreign competition." Noting other countries' restrictive practices concerning U.S. dollar expenditures, Blackie said U.S. industry must adapt itself to the changed conditions. He said this is a challenge that can be met by American industry.

New safety measures

Construction of test barriers between east-west lanes of the Pennsylvania Turnpike at known danger points has been recommended by the state legislative committee studying safety measures for the 327-mi toll superhighway.

Several types of experimental barriers will be put up and the results studied over a five or six-month period.

The committee also suggested the painting of luminous white lines along the inside and outside edges of both lanes of the entire expressway. Lines would be the same as those now dividing each lane into two strips.

Among other committee recommendations were: hiring of a qualified traffic safety engineer as permanent staff member of the turnpike commission; construction of at least 10 additional drive-off areas; and installation of mechanical signal devices, controlled by police, to allow development of "speed control zones" based on prevailing weather conditions.

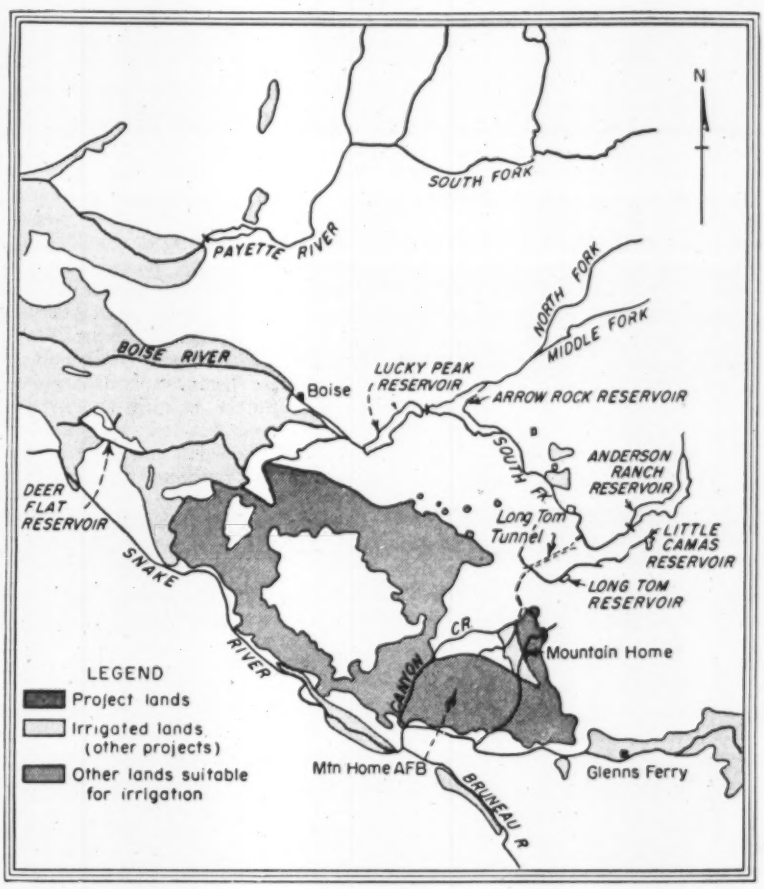
Stiffening truss chord of N. Y. bridge cracks

The urgency of reconstructing the Manhattan Bridge over the East River in New York City was emphasized last week when the bottom chord of a stiffening truss in the 1,470-ft main span cracked.

Engineers in the city's Department of Public Works attributed the failure to fatigue stresses set up by unbalanced loading. Similar failures have occurred in the suspended steel many times since the bridge was completed in 1909.

The roadways of the Manhattan Bridge are supported on four stiffening trusses, which in turn are suspended from four cables. Subway trains between Manhattan and Brooklyn cross the bridge in the outer lanes. This unbalanced loading induces a torque in the stiffening trusses, which is claimed to be responsible for past and present cracking of truss members.

A report recommending reconstruction of the bridge, which probably will urge shifting the trains to the center lanes, is expected to be submitted shortly by D. B. Steinman, consulting engineer, who has been studying the problem for the Department of Public Works.



MAP SHOWS NEW LAND proposed for irrigation at Mountain Home, Idaho, under plan developed by Idaho Power Co. to utilize excess groundwater threatening productivity of farms in Boise Valley, and to make feasible development of adjoining desert areas.

Sloan drafts Idaho irrigation scheme as alternative to Reclamation plans

Survey sponsored by utility company to be used to support objections to Hells Canyon Dam

An alternative to the Bureau of Reclamation's plan for irrigation of Idaho's Mountain Home project—one that is expected to play an important role in the Hells Canyon Dam controversy—has been presented to Secretary of Interior McKay.

The plan—drafted by W. Glenn Sloan, co-author of the Pick-Sloan plan for Missouri Valley development—is claimed to do twice the work of the bureau plan at less than half the per acre cost.

It would irrigate 123,000 acres of desert and at the same time drain Boise Valley farmland which is now threatened by a rising water table. The cost: $53 million or $430 per acre.

The bureau proposal, which would not tackle the Boise Valley problem, would spend $253 million to irrigate 183,000 acres, or $1,090 per acre.

• **Utility firm promotes plan**—Drafting of the Sloan plan was financed by the Idaho Power Co. It is expected to strengthen the power company's case before the Federal Power Commission against construction of the bureau's high-level Hells Canyon Dam on the Snake River. And, it will be cited in support of the company's alternate plan to build three low-level dams.

The Mountain Home development, one of the largest reclamation projects, has remained unfinished because Bureau of Reclamation proposals were too costly to win congressional approval. Only a small portion of the 183,000-acre sagebrush-covered flat is irrigated, from two small reservoirs.

Under the Sloan plan, 110,000 acres of this project and about 12,000 of the Hillcrest project would be irrigated.

• **Proposed Sloan projects**—The irrigation proposal drafted by Sloan, a retired Reclamation Bureau engineer, would put 600,000 acre-ft of water annually on the project from three sources: 250,000 acre-ft by construction of a diversion dam on the south fork of the Boise River to send water through a 7-mi tunnel into Long Tom Creek Reservoir; 200,000 acre-ft by drainage pumping of surplus water from Boise Valley farmlands, and 150,000 acre-ft by pumping water from the Snake River into Deer Flat Reservoir.

The plan calls for construction of a 23,000-kw power plant near the outlet of the Long Tom diversion tunnel to utilize a 50-ft head. Sloan also proposes installation of generators with a 48,000-kw capacity at the Lucky Peak flood control dam.

Together these power plants would produce more than enough energy for the 450 pumps which will be used for drainage of Boise Valley farms, whose productivity is threatened by a rising water table, and for lifting water from the Snake and Boise Rivers. Sale of surplus power would help repay costs.

• **Advantages outlined**—The original Bureau of Reclamation plan for the Mountain Home project called for importation of surplus Payette River water into the Boise Valley through a series of canals and tunnels, allowing use of Boise River water released by this importation for the Mountain Home area. The key feature of the project would be the Payette-Boise aqueduct, carrying water from Garden Valley Reservoir by means of a 30-mi Mores Creek tunnel underneath the intervening divide, into Lucky Peak Reservoir on the Boise River.

The Long Tom diversion tunnel proposed by Sloan is also considered in the bureau proposal, but Sloan's plan eliminates the need for diversion from another watershed by utilizing the Boise Valley drainage water and Snake River water through pumping.

Sloan claims these advantages:

- It provides an economical solution to the Boise Valley drainage problem.
- There is no transfer of Payette River water to the Boise River watershed.
- Construction time could be reduced from 30 years to less than 10 years.
- Operation and maintenance costs, estimated at $6 an acre, are well within ability of irrigators to pay.
- Indirect federal subsidies would be reduced 80%.
- There is no duplication of facilities.

Libby Dam delay

Army Engineers recall plans for $264-million Montana power project

The United States has withdrawn its application from the International Joint Commission for permission to construct the Libby Dam on the Kootenai River in Montana near the Canadian border.

This is bound to delay start of construction on the $264-million hydroelectric project by a year or more. No date had been set for construction, but the project was authorized by Congress in 1950 and Army Engineers had been busy on plans until funds ran short last fall.

Vigorous opposition from business interests in Montana combined with an unenthusiastic reponse on the part of the Canadian government and the Province of British Columbia was responsible for withdrawal of the application. Because roughly 20% of the storage reservoir would be in Canada, the matter requires the approval of the International Joint Commission.

• **Preliminaries**—Plans for the Libby project, approved by Congress, called for a dam with a storage reservoir capacity of 4,230,000 acre-ft. The powerhouse would have an initial installed capacity of 665,000 kw. Libby would provide part of the sorely needed upstream storage for such Columbia River projects as Grand Coulee and Chief Joseph.

Opposition from the U. S. side of the boundary had come from the Great Northern Railroad, a large Montana lumber company and a minerals mining company. All had argued that construction of the project would mean major relocation of their facilities and result in higher operating costs and loss of other valuable assets.

Great Northern's "water level line" runs right along the bank of the Kootenai and would have to be moved if the project were constructed.

This opposition, which has become increasingly vocal in recent months, was the biggest factor in Corps of Engineers decision to request withdrawal of the IJC application. The corps wants a chance to straighten out domestic matters on the project before asking permission of the international agency. At the same time, it is believed the Province of British Columbia, might be more amenable to the proposal later.

• **Answer**—A possible solution to domestic opposition—locating the project some miles upstream from the site—has been under construction. All of the protests of the mining concern would be quieted by such a move, and the railway and lumber company would suffer less damage.

The corps insist that its action in withdrawing the request does not mean that it has given up the idea of the project. It means merely that the corps wants more time to solve the domestic problems which have arisen.

Application for IJC approval was filed by the State Department in January 1951. In March of that year a series of four hearings were held in the area—two on the U. S. side and two on the Canadian side. During those hearings, the Canadian government and the provincial government gave their approval but demanded just compensation for losses.

It was made clear that the Canadians wanted more than monetary compensation for physical assets which would be required. They were aiming at an option on an "unstated" amount of the electric energy to be produced at the dam. There has never been an official request as to the portion of the output which the Canadians would want, but informed U. S. sources say it is probably much less than 40%—a figure that has been bandied about by domestic opponents of the project.

Immediate aim of the engineers is to get more planning money, to provide a thorough study of the Libby project situation.

Alcoa ordered to build

Aluminum Co. of America plans to start work at once on a $40-million defense plant in Cuyahoga Falls, Ohio, despite opposition by the village, which has refused to issue a permit for the project.

The village wants $20,000 compensation per year in consideration for not being able to collect taxes on the proposed government plant. An order from the Air Force directing that Alcoa start construction of the heavy press plant immediately ended more than three months of negotiations with village officials.

Village Solicitor Paul W. Walter contended the Air Force had broken faith by ordering the construction to start without arranging for temporary compensation. The state, county village and school district would get $500,000 annually if the plant were a privately owned installation, Walter said. The $20,000 the village is seeking is just for "housekeeping costs," he added.

Bay State report

Revision of Massachusetts public building methods urged to cut red tape

A report recommending reorganization of the Massachusetts Public Building Commission has been handed to the Massachusetts legislature.

Prepared by a special commission on the structure of the state government, the report states that the commonwealth has suffered considerable financial loss because of delays attributable to the existing system of construction control and supervision.

Some of the delays are due to the procedure for handling change-order requests. Specified by statute, this procedure requires 38 steps and action by five separate agencies. Other delays are blamed on inadequate staffing of the building commission, disputes between the commission and operating agencies, and failure of various supervisory personnel to act promptly.

The report also claims that inspection is inadequate. It complains that the practice of exempting particular projects from the jurisdiction of the commission undermines the principle of central control and limits the usefulness of the commission.

• **No central records**—No central system of performance records is maintained for materials, structural systems, equipment and other items used on state projects. Thus, costly mistakes may be repeated and the development of an efficient maintenance program is impaired.

To correct these weaknesses, the special commission recommends that the commission be replaced by a new Division of Building Construction under the Commission on Administration and Finance. The director of this division would be required to be a registered architect or professional engineer. He would have primary responsibility for overall planning and control of the state's building construction and maintenance program. He also would keep periodic maintenance records to provide information on material and equipment performance.

The commission on administration and finance would appoint designers of projects, on the advice of the division director, approve contracts, issue rules for change-order requests and decide appeals.

The special commission was aided in its study by Hall Nichols, director and chief engineer, Massachusetts Building Commission.

New scribing methods may replace drafting in preparation of maps

Scribing or engraving maps on plastic or glass that has been coated with a special film saves 30 to 70% of the cost of map making. A panel of experts from six government map-producing agencies cited these substantial economies at the recent annual meeting of the American Congress on Surveying and Mapping.

There are comparable savings in working time and in the period for training scribers as compared with conventional pen-and-ink draftsmen. Maps are scribed on dry surfaces, with no ink to smear. Corrections can be made very easily any number of times by simply recoating the surface and rescribing.

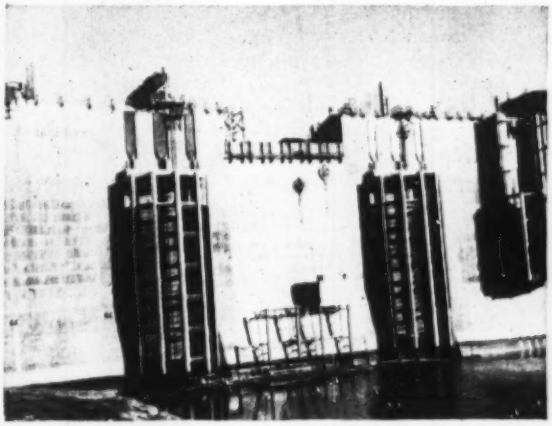
• **Easier to train scribers**—Scribers can be trained with great speed, panel members said. It takes from three to 20 days to train scribers, as against ten to 80 days to train draftsmen. In addition, training courses for scribers are more productive. The U. S. Soil Conservation Service reported that it has been able to train nearly 100% of scriber applicants as compared with about 60% of drafting trainees.

At the U. S. Geological Survey, development work has been going on for the last couple of years in scribing on an opaque coating or emulsion applied to a semirigid transparent plastic sheeting like plexiglass. Other agencies have done similar work.

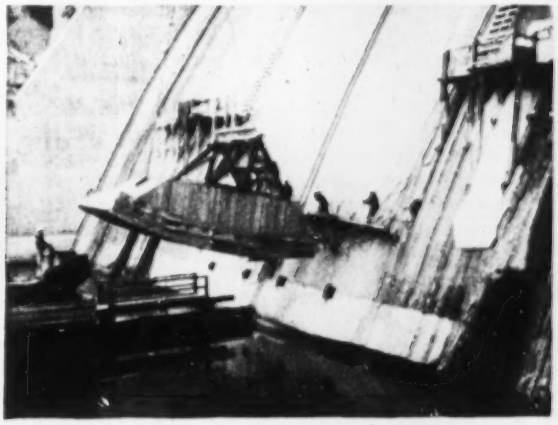
• **Method has promising future**—Panel members agreed in the opinion that scribing eventually will replace drafting for preparation of final reproduction copy, Charles F. Fueschsel of USGS, panel moderator, summarized the reasons as follows:

1. Scribing produces lines of better quality and consistency than can be obtained with smooth inking.
2. Better reproduction is possible, as the scribed map is processed directly to the press plates.
3. Man-hour production goes up 20 to 30% over drafting with ink.
4. Simplified processing by the new method saves materials.
5. Maps scribed on plastic promise to remain in good condition for many years.

USGS already has completed several maps by using the new scribing method.



REINFORCED CONCRETE CLOSURE SLAB being lowered into glides, sealing off upstream end of diversion tubes. The glides were placed before the river flooded the construction area during first stage construction.



CAISSON BEING LOWERED into place on downstream face of dam preparatory to sealing off the downstream end and clearing tubes which were then pumped and cleaned before placement of concrete.

Canyon Ferry reservoir is forming

Canyon Ferry Dam, a key Missouri River Basin project under construction 17 mi northeast of Helena, Mont., began impounding water last month when temporary diversion tubes low in the center of the dam were closed.

Water immediately began backing up behind the structure until only a small section of the old Canyon Ferry Dam about a mile upstream protruded above the surface of the reservoir now forming.

Closure of the two 10-ft diversion tubes below the Missouri River's surface was completed under a coordinated river control plan. Far upstream in the headwaters at the edge of Yellowstone National Park the Montana Power Co. had cut the flow of the river preparatory to the closing operation. Then, shortly before the closure was scheduled to begin, flashboards were placed on the superstructure of old Canyon Ferry Dam cutting off the river's flow except for about 500 cfs resulting from leakage.

By morning of the following day, the water level between the two dams had been lowered sufficiently to permit placing reinforced concrete diaphragms in the slides at the face of the diversion conduits. When the first slab was in place over one of the tubes, crews began working on placement of a caisson over the downstream end of this tube, sealing it off from the river flow. The caisson had one side open for fitting over the lower end of the tube; the top also was open to provide access for workmen and equipment.

Tubes were filled by first concreting a seal plug 20 ft long at the upstream end. Then, concrete was pumped into the remaining space. The whole closure operation took about six days.

With the closure of the tubes, the spring construction season opened and concrete work now is being resumed on the $29.5-million project, which will provide flood control, irrigation, and power, and serve to regulate the flow of the upper Missouri River (ENR April 17, 1952, p. 68).

Building code standards for plastics, 90 other changes approved by BOCA

The Building Officials Conference of America approved requirements for plastics during its annual meeting in Dallas last week. (This is the first time any such provisions have been included in a major building code.)

Also the group approved 90 other changes or additions to its code, which it has proposed as a national model code.

Plastics to be used in construction must be listed by the Plastic Materials Manufacturers Assn. or the Manufacturing Chemists Assn., Inc. Plastics must be flame resistant, or must burn no faster than 2½ in. per min when subjected to ASTM standard tests for flammability.

Other provisions approved:

• In view of the traffic and parking problems facing practically every American city, BOCA approved six-floor "open air" parking garages of steel construction. Most fire insurance and municipal officials have asked for enclosed walls or for garages with only four tiers over 10,000-sq ft areas. BOCA approved five tiers and 30,000-sq ft areas. BOCA said employees of such garages must be trained in fire fighting, and that the public should not be allowed above the first floor.

• Clear height (floor-to-ceiling) requirements in residential structures was lowered to 7 ft 6 in. for the first floor and 7 ft 4 in. for upper stories. Former requirements called for 8 ft and 7 ft 6 in.

• Cofar floors by Granite City Steel Company—a reinforced concrete construction with galvanized steel sheets serving as forms and reinforcing.

• Vermiculite and perlite aggregates for use in construction of partitions and column and girder fire protection.

• Tile facings on masonry and wood-frame walls can be ⅜ in. thick instead of ¾ in. thick, under the new rules.

• **Code unification**—Also, important steps toward a nationwide uniform building code were taken last week in Dallas during a meeting of the Joint Committee on Building Codes and the annual convention of one of its members, the Building Officials Conference of America.

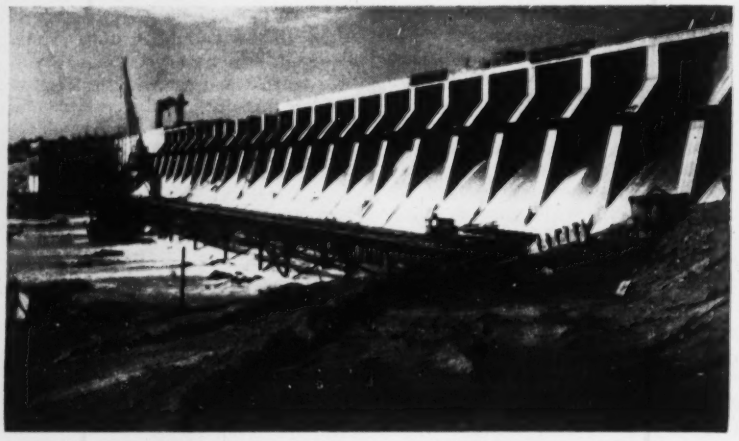
The joint committee is trying to reconcile differences in building codes sponsored by nine organizations: American Standards Assn., Building Officials Conference of America, Housing and Home Finance Agency, National Board of Fire Underwriters, National Bureau of Standards, National Fire Protection Assn., Pacific Coast Building Officials Conference, Underwriters' Laboratories, Inc., and the Construction Division of the Department of Commerce.

Last week, the joint committee came to agreement in two new fields:

• Administrative procedures of municipal building inspection departments.

• Use of public property that should be allowed contractors while a building actually is under construction.

The group meets July 10 in Boston.



HALTED BY DEPRESSION in 1930 and revived in 1950, work on Georgia Power Co.'s Sinclair hydroelectric project at Furman Shoals on the Oconee River is now in the final stage. The $17-million project will have two 22,500-kw units. The dam is 4,000 ft long and 105 ft high, with 1,224 ft of concrete spillway and bulkhead. Earth abutments on each end have a length of 2,764 ft. Massman Construction Co. of Kansas City had the prime contract of $4 million for earth fill, dam and powerhouse work.

Hoover hits power policy in Case Jubilee speech

Case Institute of Technology at Cleveland celebrated its 75th anniversary last week. At the two-day convocation 22 outstanding leaders in science, industry and education gave their opinions on what the atomic age holds in store.

"The atomic age—a challenge to free men" was the theme of the diamond jubilee convocation. Panel discussions assessed the economic, technical, social, and moral implications of atomic power.

Former President Herbert Hoover took the occasion to score the federal government for its encroachment in the field of power. He proposed that Congress make no further appropriations for dam projects designed solely to supply power or even for multipurpose projects unless the power output is leased to private enterprise or local authorities created by the states themselves.

Mr. Hoover charged that there has been a tendency to underestimate the cost of big federal dam projects. He compared the original estimates of $39 million for Hungry Horse Dam in Montana and $72 million for the Oahe project in South Dakota with actual costs—at present indicated at $109 million and $293 million, respectively.

Conceding that part of the cost increase could be attributed to higher prices, Mr. Hoover also saw as responsible a practice of "presenting the Congress with a modest project and then hugely edging it up."

The former President called for a temporary commission to be named jointly by Congress and the President to "reorganize the whole federal venture into the power business." He listed as one of the prime duties of such a commission the revision of accounting methods so that an equitable division of costs can be assessed to navigation, flood control, irrigation, community water supply as well as power.

He referred to the fact that in some instances part of the capital cost of the power facilities had been written off to other functions, thereby reducing the earning requirements for interest and amortization of the government's investment.

In a special statement on the significance of the convocation, T. Keith Glennan, president of Case, declared: "The challenge of the atomic age will be nowhere greater than in the field of technology and technological education. It is imperative that Case study and analyze the challenge, for the college must ready itself to meet the new and heavier demands."

right ROOF for a prize school

Colonial Heights Elementary School, Yonkers, N. Y.
Architect: Edward Fleagle
PYROFILL Roof Deck Contractor: Keystone Fireproofing Corporation

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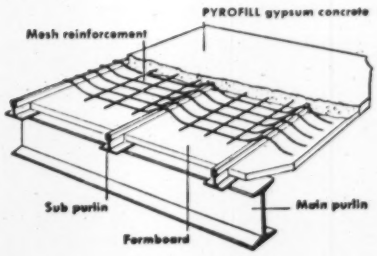
PYROFILL is economical. PYROFILL is fireproof. PYROFILL is light weight. And adaptable! And fast! As much as 30,000 square feet per day can be poured by a single crew. These are the good reasons why a PYROFILL Gypsum Poured-in-Place Roof Deck was the logical choice for the prize-winning Colonial Heights Elementary School in Yonkers, N. Y. A choice in roof decks worth remembering!

*T. M. Reg. U. S. Pat. Off.



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GRADALL'S advanced design, plus the foresight and determination of two contractors, has made a marginal slag pit operation at Dover, Ohio, a money-making business.

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It was then they saw a Gradall in action—and the solution to making good on their investment. Parked on top the slag, the Gradall exerted its powerful down-pressure and bucket "wrist" action to cut back into the slag, efficiently removing it right down to the swamp.

Business prospered and within a few months Farbizo bought a second Gradall. Not only have the machines increased production, but they have also extended the life of the pit many years by making it possible to remove slag right down to the pit floor.

This story is typical of how a Gradall's efficiency and many uses have "paid off" for its owner. Many smaller contractors have similarly been able to enlarge their operations —to take on larger, more profitable contracts with this multi-purpose machine. Larger contractors keep Gradalls busy on many and varied "clean-up" jobs formerly done only by hand labor. But let your nearest Gradall Distributor show you how a Gradall can build profits for you—contact him for a field demonstration.

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Far West strikes ended by agreements as other strikes continue

National strike picture is mixed as some areas are relatively free but others still in trouble

Striking AFL ironworkers in Northern California went back to their jobs last week after winning their fight to get joint trusteeship with employers in administration of health and welfare programs.

The strike was ordered by locals of the AFL International Association of Bridge, Structural and Ornamental Iron Workers. The first of the locals went out March 30 and others followed, with some 3,700 men off work at the peak of the disagreement.

The labor-management agreement of Local 472 provided for joint administration of the welfare fund, based on an employer contribution of 6½ cents an hour. Other locals settled with the Iron Workers Employers Association of Northern California for joint trusteeship, with the employer contributing 6½ cents for shop men and 7½ cents for field men.

Members of other building crafts had continued work during the strike. Elsewhere in the country, the labor picture looked like this:

• **Western Washington**—A four-week tie-up of heavy construction in western Washington State ended last week with acceptance by the operating engineers' union of a contract which provides for an immediate health and welfare plan costing the employers 10 cents an hour and a 7-cent hourly wage increase next Jan. 1.

Upgrading of certain jobs will provide immediate wage increases for some engineers while travel allowances also are boosted for jobs bid since Jan. 1.

• **Newark, Ohio**—A carpenters' strike that tied up construction work in Licking County, Ohio, for three days ended when a new contract, calling for a 15-cent an hour boost, was signed by both union officials and contractor representatives.

The carpenters had asked for a 25-cent an hour boost.

Pressing its demands for a 3% pension fund contribution, the New Jersey District Council of Ironworkers, AFL, staged a strike last week against general contractors in Essex, Morris, and Middlesex Counties.

The union refused to supply men to those contractors affiliated with employer groups who rejected new contract proposals.

• **Texas**—An estimated 75% of Fort Worth, Tex., construction jobs involving sheet metal work were halted Saturday by a work stoppage of Fort Worth sheet metal workers.

An official of a sheet metal firm said only "three or four" firms had signed the contract granting the workers a 12½-cent an hour wage increase. About 50 firms have refused to sign.

• **Indiana**—Labor disputes in Indiana halted building work in two areas. Some 4,200 building craft workers in Evansville quit work. The unions are asking pay boosts ranging from 15 to 35 cents an hour.

Some 350 members of the plumbers and steamfitters union in the Terre Haute area quit last week seeking a 17½-cent an hour wage increase.

• **Kentucky**—Painting at major construction projects in the Louisville, Ky., area was halted last week by a strike of painters.

Subsequent efforts to mediate the wage dispute—cause of the strike—failed.

• **Idaho**—Associated Builders of southern Idaho voted to close all construction projects in the Boise area because of a threatened strike by building trades unions. Associated Builders represents 59 contractors.

Jurisdictional strikes

A jurisdictional dispute between ironworkers and carpenters has halted work on the construction of the Corps of Engineers Cheatam Dam at Ashland City, Tenn.

Such a strike had previously stopped construction on the $52-million dam at Old Hickory, some 30 mi upriver.

The controversy arose over the question of setting reinforcing steel. The carpenters have been performing this work, and now the ironworkers are asking for the job.

• **Youngstown, Ohio**—Striking AFL carpenters returned to work on the $3-million wing of the South Side Hospital, Youngstown, Ohio, after being off the job for nearly a week in a jurisdictional dispute with sheet metal workers.

Carpenters had quit to support their claim that sheet metal workers were not supposed to install desks, counters and other metal equipment. The two unions compromised, each will do a portion of the installation.

WAGE INCREASES AT AEC PROJECTS SINCE WAGE CONTROL END

Classification	Location					
	Paducah	Oak Ridge	Hanford	Savannah River	Arco	Fernald
Laborers				15		
Pipe Fitters & Steam Fitters	10					10
Roofers	15					
Teamsters	15			5		
Boilermakers	15		8		8	
Machinists	15	20				
Ironworkers	16½		10			
Carpenters			9	14½		7½
Cement Finishers			11			
Bricklayers					15	
Painters						
Brush				12½		
Spray				17½		
Sign				15		

All prices in table are in cents.

St. Louis probe

Federal grand jury to investigate construction in St. Louis area

A federal grand jury investigation of reported labor racketeering in the construction industry in the St. Louis area began this week.

U. S. Attorney George L. Robertson said evidence gathered by the FBI in the last 18 months would be presented.

Such an investigation has been sought for several years by leading contractors and law-enforcement officials.

Racketeering was widely believed to be the underlying cause of violence which last year erupted in three fatal shootings of leaders of the AFL building laborers union and two bombings last February.

As a result of the bombings, a circuit court grand jury has been investigating affairs of the AFL Steamfitters' Local 562. The union's offices were damaged by an explosion a few days after a bomb was set off at the home of former Sheriff Thomas F. Callanan, director of the steamfitters' welfare fund. Callanan is a brother of Lawrence Callanan, ex-convict head of the union.

The necessity for an inquiry which could compel testimony through the power of subpoena was emphasized recently by James W. Conner, operating director of the St. Louis Crime Commission. He said that even "good people" tended to "cover up" when asked about shakedown attempts.

• **Investigation**—In the grand jury investigation, the government will go into reports of "kickbacks" on construction jobs involving interstate commerce, fraud in connection with government building contracts and violations of the federal anti-racketeering statutes, Robertson said.

He explained that presentation to the grand jury of cases involving violation of federal statutes had been authorized by Warren Olney, assistant attorney general.

Reports of racketeering have included complaints of two attempted $50,000 shakedowns of general contractors, accompanied by threats of work stoppages and jurisdictional disputes. There have also been reports of collusion between certain unions and certain subcontracting firms. As a result of this collusion troublesome interruptions of a job come to an end when one of the certain group of subcontractors gets the subcontract.

Identifying a Communist

The Goldwater-Rhodes bill, now before Congress, would prevent any "Communist labor representative" from representing workers.

An officer or employee of a union would be deemed a Communist labor representative if he:

- Advocated, aided or supported "the advancement of the economic, international, military, and governmental doctrines, policies, or aims of the world Communist movement;
- Knowingly aided or supported any Communist-action or Communist-front organization, any Communist foreign government or any organization listed as subversive by the Attorney General; or
- Instigated or encouraged, or may instigate or encourage, strikes, slowdowns, or other interruptions of work to aid the Communist movement or a Communist foreign government."

A union would be deemed a Communist, labor representative if:

- "It operated, even in part, as a vehicle for promoting or publicizing and advocating the policies and aims of Communism;
- It gave aid and support to any Communist foreign government or Communist-front organization; or if
- Any Communist labor representative is an officer or employee of, or is influential in formulating the policies of, the union."

Pittsburgh tunnel delayed by electricians' strikes

Edward E. Schmidt, Pennsylvania secretary of highways, accused the AFL electricians of causing a 10-week delay in opening the Squirrel Hill Tunnel on Pittsburgh's Penn-Lincoln Parkway.

The tunnel was first scheduled to open Feb. 1. That date was later revised to March 15. Present plans call for a June 1 opening date. Only electrical installation work remains to be done.

Meanwhile, a jurisdictional dispute between the electricians and operating engineers on maintenance of the finished tunnel is shaping up.

David M. Walker, state secretary of labor and industry, said assignment of the work will be made in accordance with jurisdictional rights. He said the electricians have been assured of electrical equipment maintenance.

The business agent for the electricians claims that the entire operation of the tunnel is "strictly electrical."

No brotherly love

Philadelphia operating-engineers-union factions engage in feud

A simmering seven-month feud within the faction-torn International Union of Operating Engineers boiled over into violence recently and, as a result, seven union members have been indicted by the Philadelphia County Grand Jury and bound over for a trial to be held in the near future.

The bitter factional row between the IUOE and a big bloc of its Philadelphia Local 542 follows last summer's 110-day strike that tied up heavy construction in the Philadelphia metropolitan area during the period of the strike.

The outbreak of violence occurred in a crowded elevator of a Philadelphia hotel.

Theodore McCarty, a member of the local was badly beaten about the head and face after a union meeting. One purpose of the meeting was to patch up differences between rival union factions. Warrants were issued for McCarty's assailants after one judge dismissed the charges, but another took the case on his calendar.

• **Before the fight**—The international suspended Roy J. Underwood, the local's president, after the 110-day strike was ended and took over supervision of the local. McCarty is an Underwood man.

The union local has been in a turmoil since Underwood was removed as president.

The Underwood faction says that the movement to restore him to office and get rid of international domination is stronger than ever.

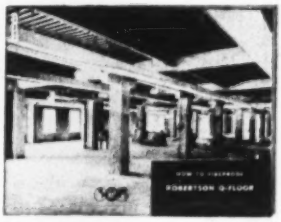
A suit by 12 local members to restore Underwood is now on the docket of the U. S. District Court.

Underwood maintains an office in Philadelphia. Membership donations—voluntary on the part of his faction—pay the rent and his expenses. He is excluded by the international union from attending union meetings or participating in union affairs. Underwood says he keeps in close touch with the members.

Heavy construction contractors are keeping their fingers crossed in the hope that the union brawling doesn't bring on a strike or work stoppage. The long strike last year tied up about $100 million in construction projects in the area.

Write for these technical data books from H. H. Robertson's Q-Floor library

How to fireproof Robertson Q-Floor and Structural Steel



This booklet is an exposition of fireproofing methods employed when Q-Floor is used in conjunction with structural steel framing in a multi-story building and must meet local building code requirements. It covers most problems likely to be encountered by the designer and contains charts of typical code requirements, fire resistance ratings, and framing and ceiling details, both basic and with all combinations of extras.

Design and cost factors

With the use of this book you will find you can readily compute the cost of all types of structural floors with integral electrical wiring systems and compare them with Q-Floor. The study is based upon a typical multi-story building and is replete with charts and cost studies of all components to enable you to accurately estimate for your own vicinity. A critical analysis of this nature should be included in every architectural and engineering library.

Concrete fill on Robertson Q-Floor

This is the first of a series of booklets giving recommended practices for sub-contractors working on Robertson Q-Floor jobs. It contains detailed specifications for formulation, placement and curing of the fill, together with well-documented treatises on the nature and reactions of concrete. You will find a section on shrinkage cracking and how to control it, well illustrated with authoritative graphs and charts.

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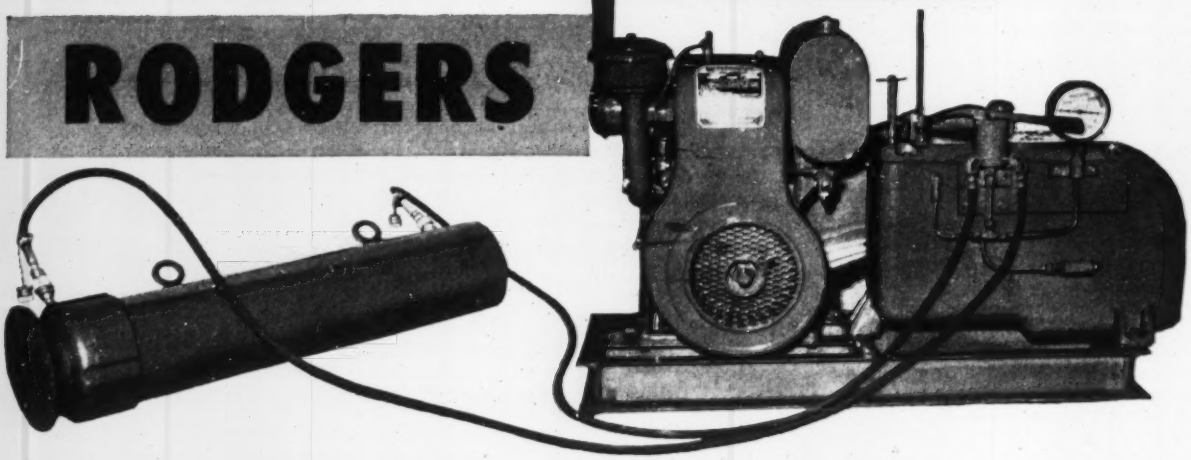
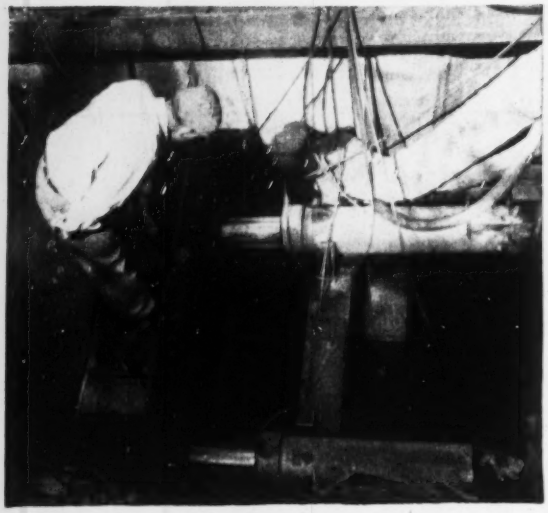


Hydraulic Jacking Units



50 to 600 TONS CAPACITY

Rodgers Hydraulic Jacking Units are available in capacities from 50 to 600 tons for jacking compressed concrete pipe, corrugated pipe, well casing and other jacking applications. Hydraulic cylinders are made in various capacities and lengths of ram travel. Hydraulic pumps are offered in power driven and hand operated models to suit your requirements. Cylinders are constructed of high strength hard drawn seamless steel tubing internally bored and honed to extreme accuracy. Pistons and rams are of alloy steel, heat treated and ground.

Catalog No. 317A gives complete details and specifications on Jacking Cylinders and Hydraulic Pumps. Write for your copy today!

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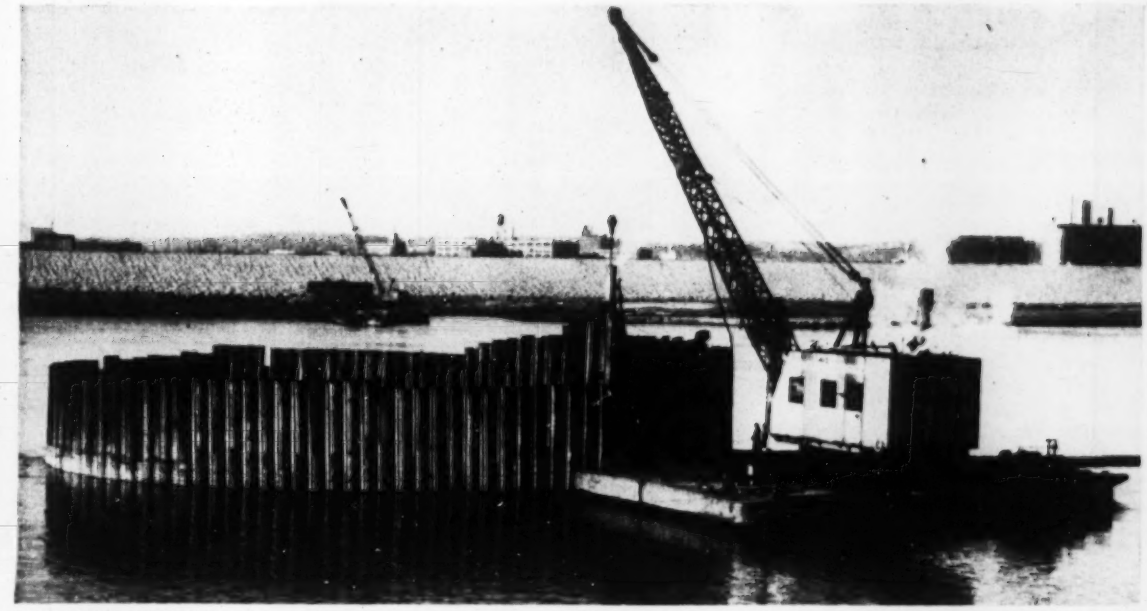


SHEETPILE COFFERDAM nears completion in the Missouri River at Kansas City for the construction of the first of four main river piers to carry the city's new Pasco toll bridge. Piers will be sunk in open excavation to bedrock, 104 ft below river level, and sealed under air.

Kansas City gets bridge fast

Structure across the Missouri River will contain a self-anchored suspension bridge and be founded on piers that require 50 psi air to seal

MUNICIPALITIES faced with the need for new bridges to serve their ever increasing traffic—yet plagued by the lack of funds—can take a lesson from Kansas City, Mo. In less than two years following approval of financing methods this bustling metropolis of 800,000 persons will have its new $16-million Pasco toll bridge project completed and in operation.

Kansas City is unique in that its bridges over the Missouri are probably more unattractive in appearance and less adequate for highway traffic than those of any other river metropolis of its class in the country.

Cross-river traffic on the Missouri side—totaling nearly 23,400,000 cars and trucks annually—uses the upper decks of two combination highway-railway bridges. They are the 40-year old A.S.B. (Armour-Swift-Burlington) bridge with four traffic lanes, and the 60-year old Hannibal bridge with its 20-ft roadway. In addition, the old Milwaukee bridge, located about 3 mi downstream from the A.S.B. bridge is being converted from a railroad bridge to a two-lane highway bridge.

On the Kansas side is the Fairfax bridge, which carries about 3,500,000 vehicles per year on its 22-ft roadway. It was completed in 1936 as a toll bridge, and became toll free in 1950.

• **A 25-year dream**—As early as 1926 the city investigated the feasibility of building a new bridge over the river. And in 1937 studies were made on the practicability of adding a second highway deck to the old A.S.B. bridge.

In 1944 the Missouri State Highway Department stepped into the picture and investigated a bridge between the A.S.B. and the Hannibal bridges to serve U. S. Highway 69 as part of the Interstate Highway System.

But none of these attempts to bridge the Missouri with a third structure proved successful, due primarily to the lack of public funds. In the meantime cross-river traffic increased by leaps and bounds. North Kansas City was growing both industrially and residentially. In 1950 Kansas City, Mo., annexed a 20-sq mi residential area located just north and east of North Kansas City. Population of this area has already grown to 10,000, and is expected to reach 45,000 by 1970.

The result of this growth is a tremendous increase of cross-river traffic.

• **Why build a toll bridge?**—One of the first questions that comes to mind is: Why make it a toll bridge instead of a free bridge financed by federal, state and city funds? The answer was simple. Toll-financing was the only way open.

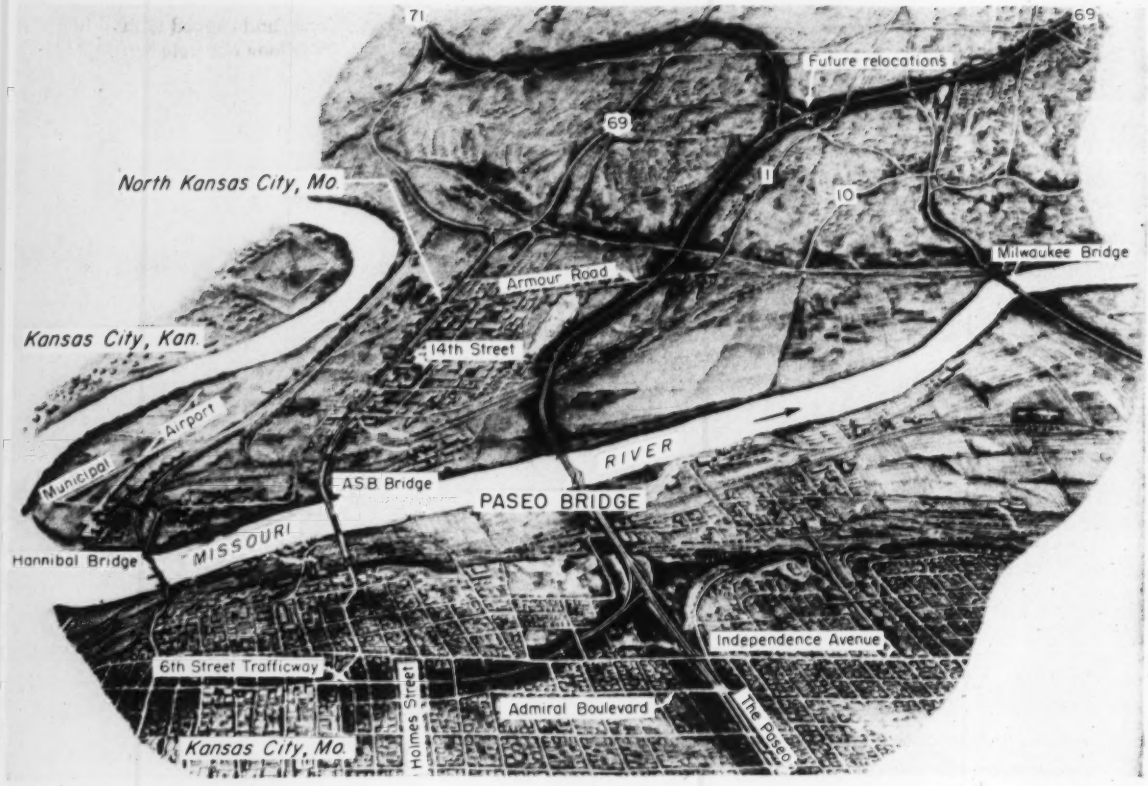
Under the present 10-year plan of the Missouri State Highway Department, Kansas City's share of urban funds is $3.5 million per year. If this entire amount were obligated to building the Pasco toll bridge project, it would take nearly five years. Actually, however, in view of other equally essential urban highway projects rating their share of the city's urban funds it might take 20 years to accumulate funds to pay for the improvement.

On the other hand, as a toll project financed by the sale of revenue bonds, it could be constructed and start earning revenue in two years.

• **Underwriting the venture**—Keystone of the entire financing plan was the fact that the Missouri State Highway Department agreed to underwrite the venture up to $800,000 per year for 10 years, out of its state urban funds. Traffic estimates, however, indicate that the project will be entirely self-liquidating from toll revenues.

In September, 1951, the County Courts of Jackson County and Clay County, Mo., undertook to sponsor construction of the Pasco bridge.

Howard, Needles, Tammen & Bergendoff were retained as consultants to study the feasibility of the project.



CONNECTING WITH proposed relocations of U. S. Highways 69 and 71 in North Kansas City, and with the 6th Street Trafficway and The Paseo in Kansas City, Mo., the new $16-million Paseo toll bridge and expressway project—when completed in April 1954—will furnish welcome traffic relief to the three existing old bridges.

They had made a similar study for the City Plan Commission in 1949 which indicated that the traffic potential at that time would not make the toll bridge self-liquidating. This time, however, their studies indicated that a toll bridge would pay off.

• **Project moves fast**—Following the completion of the engineers' report—which estimated that reasonable toll charges (see table) would repay the $16 million cost of the project over a 25-year period—machinery was set in motion to get the project under way. The highway department approved the plan the day it was submitted, in May of last year. Thirty-year bonds totaling $16 million were sold on Aug. 25 at an average interest of 3.37%.

Design plans were completed by H.N.T.&B., and bids for initial construction were received last Sept. 26. Completion date for the entire project is scheduled for April 28 of next year.

• **What it will serve**—The entire Paseo project will be a four-lane divided, limited access expressway. As shown in an accompanying sketch, the north end of the 3.3-mile project will connect at Armour Road with relocated U. S. Highway 69 leading to Des Moines and Chicago, and to U. S. Highway 71 leading to Omaha. Both relocations will be performed by the state highway department.

The western leg of the "Y" at the southern end of the new expressway will connect at Holmes St. with Kansas City's 6th Street Trafficway now under construction. This will give through traffic and traffic from North Kansas City a direct connection to downtown Kansas City, Mo.; also to Kansas City, Kan. and U. S. Highway 40, over the Intercity Viaduct.

Through traffic wishing to bypass

PASEO TOLL BRIDGE AND EXPRESSWAY

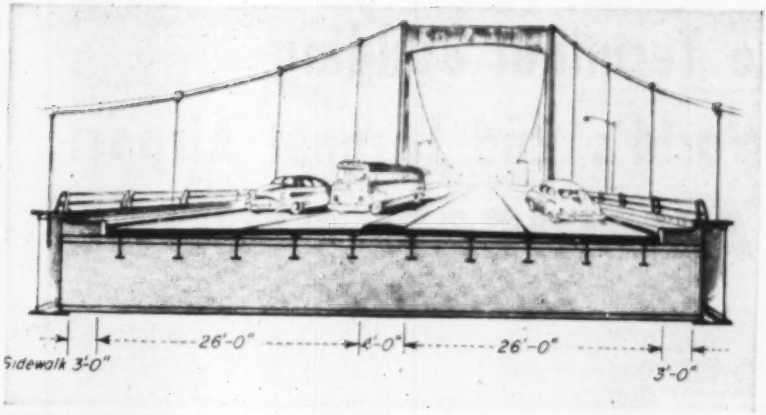
(Four-lane divided, limited access)

Length	3.3 mi.
Costs:	
Construction, including engineering	$12,285,000
Right-of-way	1,400,000
Interest during construction (2 yr.)	1,040,000
Administrative, legal and financing	100,000
Contingencies	1,175,000
Total project cost	$16,000,000
Toll charges (proposed):	
Pedestrians and bicycles	5¢
Passenger cars and motorcycles	10¢
Light trucks	15¢
Medium trucks	20¢
Heavy trucks	25¢
Additional charge per axle in excess of two	5¢

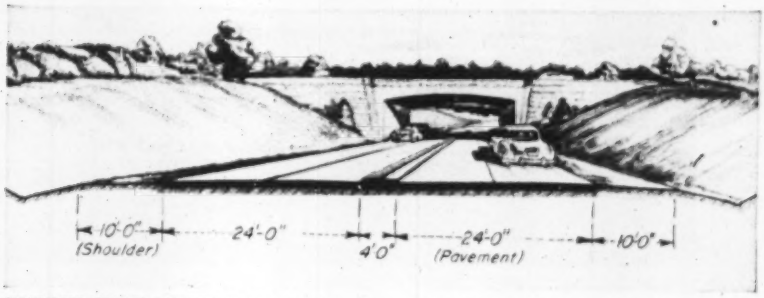
Vehicles per year (est.): 4,410,000 in 1954 increasing to 10,220,000 in 1982.

Revenue (est.): $503,000 in 1954 to $1,164,000 in 1982.

Operation and maintenance (est.): $100,000 in 1954 to $115,000 in 1982.



BRIDGE STRUCTURES will carry two 26-ft roadways, a 4-ft raised median and two 3-ft sidewalks, while . . .



EXPRESSWAY SECTIONS—whether depressed or on embankment—will have two 24-ft portland cement concrete pavements, a 4-ft median, and 10-ft shoulders.

the business district of Kansas City, Mo., on its way to St. Louis, will use the eastern leg of the "Y" which will connect at Admiral Boulevard with the Pasco—a north-south divided boulevard 16 blocks east of downtown Kansas City.

The expressway also will serve a multimillion dollar stadium the city proposes to build near the south end of the toll bridge.

• **Claim to fame**—In addition to the speed of its financing and construction the four-lane suspension bridge has two features of unusual interest to bridge designers and constructors. With a 616-ft main span and 308-ft side span, it will be the longest self-anchored suspension bridge in existence (the 300-1,033-300-ft Cologne-Mulheim bridge over the Rhine having been demolished in the war); compressed air pressures of 48 to 52 psi will be required to sink the four river piers.

Clearance above high water will be 55 ft. Approach spans are deck plate girders, measuring 174 ft and 90 ft at the south end of the bridge and 219 ft and 110 ft at the north end. The bridge, whose total length will be 1,825 ft will carry two 26-ft roadways separated by a 4-ft median, and two 3-ft emergency walks.

Stiffening girders in the suspension spans will be box members 10 ft deep and 3-ft 6-in. wide. The cables, of preformed strand type, will contain thirty-one 1⅞-in. and six 1¼-in. wire rope. They will be rounded out with aluminum fillers and wrapped to give a diameter of 12-in.

The four river piers are being sunk to bedrock by a combination of open excavation and pneumatic caissons. The tallest pier will extend to a depth of 104 ft below normal river level.

Construction of the piers has been under way since last Oct. 20, under a $2.2-million contract. A $5 million contract was awarded Jan. 9 for the superstructure. Additional contracts will be awarded soon for two large viaducts over railroad tracks to cost about $2 million each, three interchanges, and grading and portland cement concrete paving on the $3.3 million project. The river piers are scheduled for completion by Aug. 15 of this year.

• **Pneumatic caisson piers**—All four river piers (No. 2, 3, 4 and 5) are being sunk as concrete caissons through dredged sand islands inside of steel sheetpile coffer-dams. Piers 2 and 5 are made up of two 22-ft dia concrete columns 73 ft and 100 ft high, respectively. The columns are spaced 65 ft c-c, and capped with a 36-ft deep by 87-ft long concrete cap.

Piers 3 and 4 are 98 ft long, 20 ft wide, with total heights of 106 ft and 114 ft, respectively. The top 42 ft is a solid concrete cap, curved to a 10-ft radius at each end. The remaining lower portion of each pier is solid concrete except for five vertical 11x15 shafts extending from bottom of cap to bottom of pier. This, in effect, makes it a five-cell caisson.

The caissons are being sunk by clamshell, open excavation inside the cells; to be followed by final excavation and sealing under compressed air. The piers will be landed in from 3- to 5-ft of hard blue shale before pouring the caps or sealing the caisson bottoms.

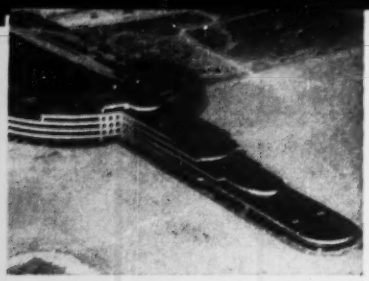
The caissons are formed inside of 12x20-ft steel panel forms. Piers 2 and 5 are poured in 16-ft lifts, and piers 3 and 4 in 9-ft lifts as they are sunk to bedrock. A total 24-hr crew of 290 men will be required to work either of the two big piers under air pressures ranging up to 52 psi, since sandhogs will be able to work only two 4-hr shifts per day.

Transit-mix concrete is being used in the piers. Pier 2 is located close enough to the bank for its concrete to be deposited in place by a land-operated crane. But concrete for the other three river piers will be lowered from a truck-ramp built out over the edge of the water, onto pontoons and ferried to the pier sites. Barge-mounted cranes will discharge the 2-cu yd concrete buckets from the pontoons into the forms.

V-shaped sheetpile breakwaters located a short distance upstream from the piers prevent scouring of the sand islands and protect the cofferdams from floating ice and debris. Construction is scheduled so that piers should be out of danger from high water.

• **Contractors and engineers**—Construction of the four river piers of the Paseo bridge is a joint venture of the Kansas City Bridge Co. and the Massman Construction Co. under a $2.2 million contract. R. D. Bleich, of the Kansas City Bridge Co., is superintendent of construction, and Noflet B. Carr, of the Massman Construction Co. is his assistant. G. L. Engelhart is field engineer, and Dave Vawter is field office manager. The American Bridge Co. holds a $5 million contract for the superstructure.

All phases of the project are under the direction of R. N. Bergendoff representing the consulting engineers, Howard, Needles, Tammen and Bergendoff. F. E. Bleistein was in charge of all design. Jacob Karol prepared the design of the suspension span. James D. Bucher is resident engineer on construction.



Huge Terminal Building at World's 2nd Largest Airport

By AMERICAN BRIDGE

Interesting Facts

Airfield is 2nd Largest in World.

Terminal Building is Largest in World.

The terminal building provides facilities of a small city, including a 62-room hotel, a restaurant to accommodate 3000, numerous shops.

Designed by: Allegheny County Department of Aviation.

Owner and Operator: Allegheny County Department of Aviation.

Architect: Joseph Hoover, Pittsburgh.

Consulting Engineer: L. W. Cook, Pittsburgh.

Structural Steel Fabricated and Erected by American Bridge: 4,000 Tons.

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4,000-Ton steel framework fabricated and erected for 460-ft. semi-circular 7-story Administration Bldg. and 578-ft. Loading Dock

THE new thirty-three million dollar Greater Pittsburgh Airport, opened in June 1952, is an impressive sight. Its sixteen-hundred acre airfield is the second largest in the world . . . larger even than Washington's National Airport and New York's LaGuardia Field combined!

But, as impressive as is the airfield itself, it is overshadowed by the spectacular Administration Building. This seven-story, semi-circular structure with its long loading dock is easily the world's largest terminal building.

American Bridge fabricated and erected the 4,000-ton steel framework for this huge structure which is 460' feet in breadth at its widest point, and with its 578-ft. loading dock has an over-all length of 979 feet. Nine months after the erection crew took over, the last rivet was driven.

This huge building is another example of American Bridge engineering and fabricating "know-how". And it is your assurance that you can depend on American Bridge to handle any type of steel-frame construction with thoroughness and speed . . . any time . . . anywhere. If you would like to know more about the advantages of American Bridge fabricated and erected construction, call our nearest office.

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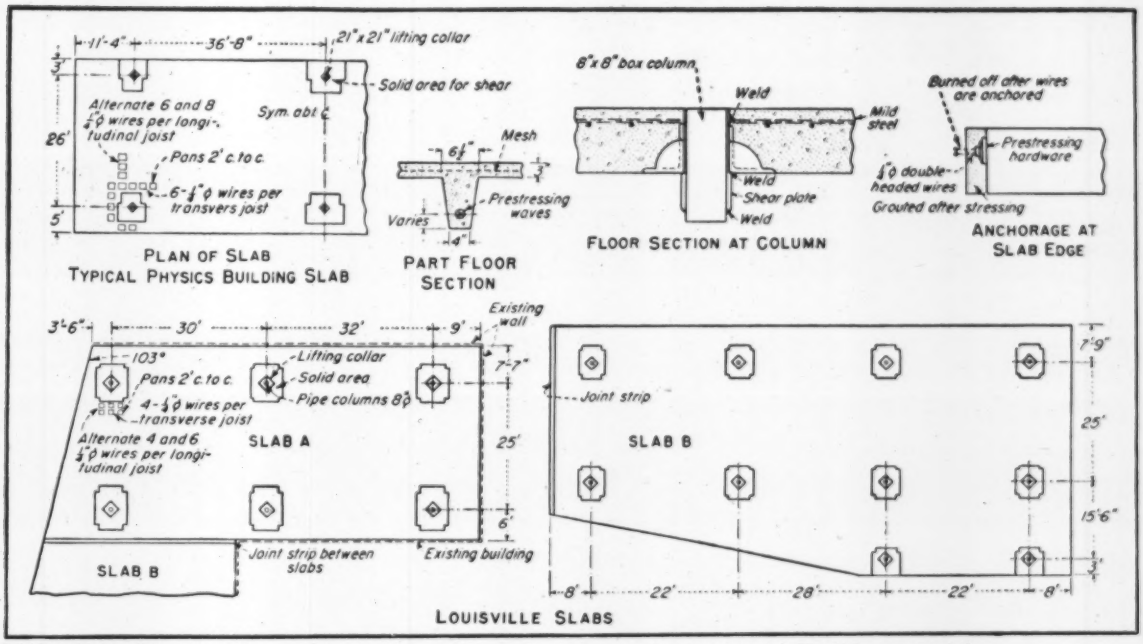
UNITED STATES STEEL



WAFFLE SLABS cast on the ground will be jacked up to form floors and roofs. The joists will be prestressed.

Lift-slab prestressed for two new buildings

Construction has started in two different cities on buildings to be erected by the lift-slab method. In both of these instances, the slabs will be prestressed.

One building—in San Antonio, Tex.,—will be three stories high. It will contain laboratories and offices for the physics department of the Southwest Research Institute. [This is the organization that developed the lift-slab method from the original concept of Philip N. Youtz, New York architect, and Tom Slick, San Antonio businessman (ENR June 29, 1950, p.38)]. Floors and roof of the 30-ft high structure will be cast on the ground-floor slab, then jacked into place.

The other building—in Louisville, Ky.,—will be a one-story parking garage. The roof will be cast in two sections on the ground-floor slab, then lifted into position.

• **New techniques combined**—These will not, of course, be the first buildings with prestressed slabs to be erected by the lift-slab method. This technique was used last year for the roof of another laboratory building for SRI (ENR April 10, 1952, p.77). The new slabs differ, however, in that they will have solid sections only around the columns, to carry the shear. Elsewhere, they will be coffered. They will be cast on plastic pans and will have a waffle-like underside similar to the lift-slab roof built for Barth Stamping & Machine Works in Cleveland, Ohio, (ENR Oct. 2, 1952, p. 39).

• **Wires placed in joists**—The SRI building is designed for live loads on the floors of 60 psf and on the roof of 35 psf. Each slab is 96x34 ft in plan. Each will be supported on 8x8-in. steel box columns spaced 26 ft on centers transversely and 36 ft 8 in. on centers in the perpendicular direction.

Concrete will be cast to a depth of 3 in. over the plastic pans. As a result, a grid of 13-in. deep joists will be formed on 2-ft centers both transversely and longitudinally. In them will be placed the prestressing wires, in groups of four and six, with eccentricities above and below the center of gravity of the section to resist negative and positive moments. The thin top slab will be reinforced with wire mesh.

The Louisville parking garage will be of similar construction but is designed for a 100-psf live load. Maximum spans are 32 ft in one direction and 25 ft in the other.

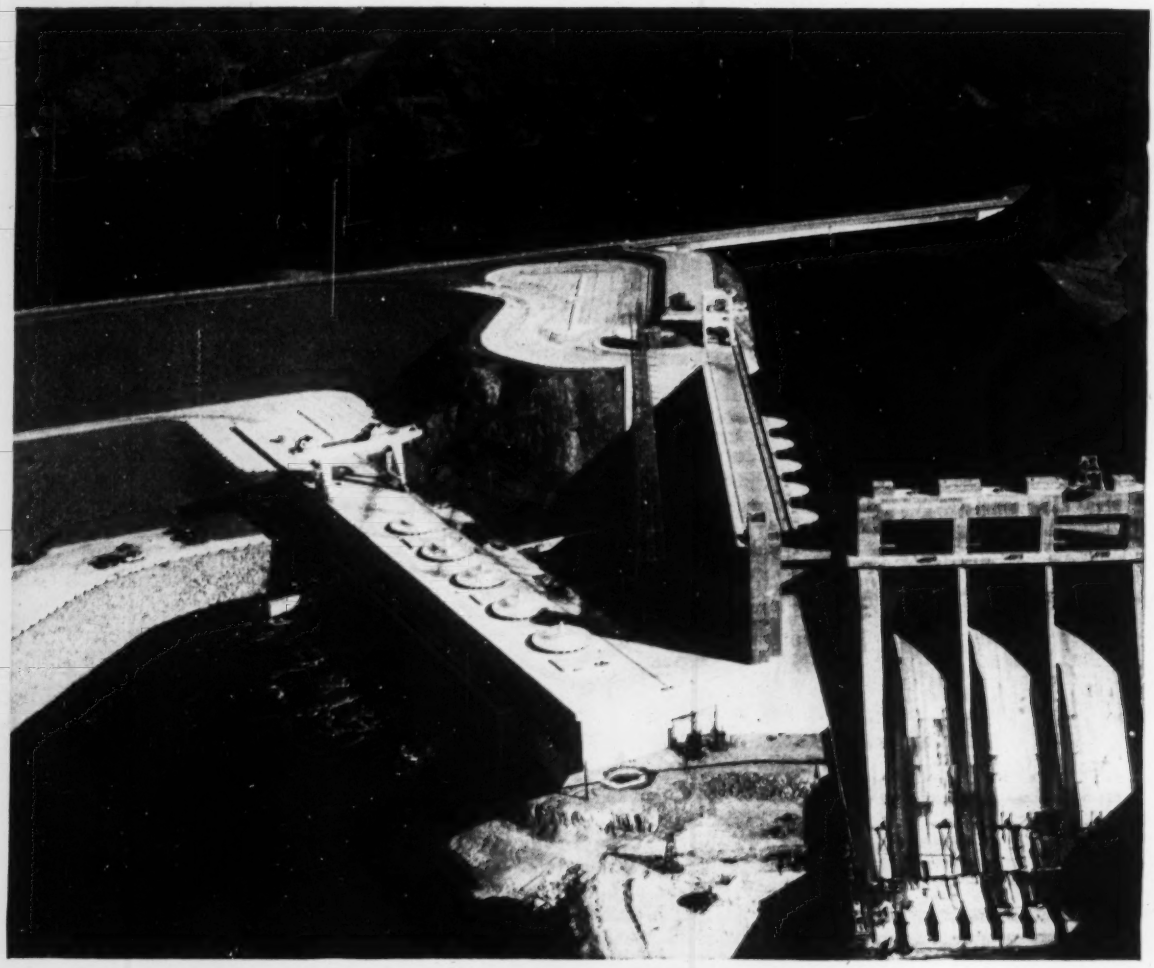
• **New-type anchorages**—Concrete for both jobs is specified to have a 5,000-psi strength at 28 days. Under design loading, the compression stress will be about 2,000 psi, while the tension stress will be zero.

Prestress will be applied with ¼-in. dia. cold-drawn steel wires having an ultimate strength of 220,000 psi and yield strength of 185,000 psi. In groups of four and six, wrapped to prevent bond, the wires will be placed in the forms before the concrete is cast. The prestress will be transferred to the concrete through end anchorages, after it has attained sufficient strength.

Initial tension in the wires will be 145,000 psi, or 28,000 lb on a 4-wire group, 42,000 lb on a six-wire group. A loss of 15% of this stress was assumed in the design to account for the effects of shrinkage and plastic flow in the concrete and creep in the steel. Friction losses will be minimized by prestressing from opposite edges of the slab simultaneously.

Prestressing methods to be used were developed by Prestressing, Inc., of San Antonio, Tex. At each end, wires will be upset cold to form two heads several inches apart. The outer head will be gripped by the jack in applying the tension. The inner head will transfer the stress to a steel plate that will distribute it to concrete.

The engineering staff of Prestressing, Inc., designed both buildings, under the supervision of Fred E. Koebel, chief engineer. SRI is acting as general contractor for the San Antonio structure but is subcontracting the prestressing to the Texas Stressed Concrete Corp. of San Antonio. Dahlem Construction Co. is the general contractor in Louisville, and the Ohio Prestress Co. will do the prestressing work for the garage roof.

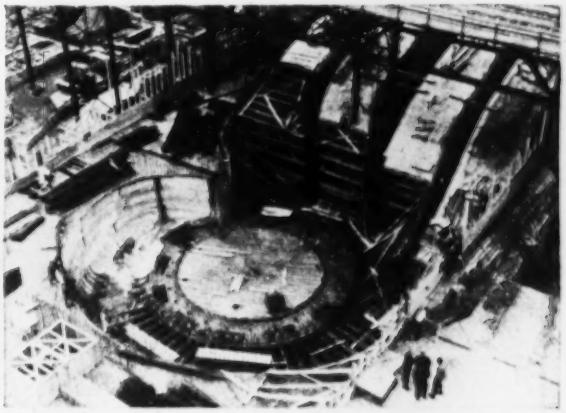


Finishing touches

Spillway buckets and training walls are nearing completion at Davis Dam (above) on the Colorado River, the finishing touches to a project whose construction was interrupted by the war. The Bureau of Reclamation put all five generators into operation last year, bringing the plant up to its 225,000 kw capacity. Soon all vestiges of construction will disappear as they already have in the neatly sloped and combed areas between the power plant and the river. Entire flow is now diverted through the power plant. The $119-million project will re-regulate the Colorado River below Hoover Dam to meet flow requirements assuring certain deliveries of water at the U. S.-Mexico border downstream. For list of former articles on Davis Dam see ENR Dec. 11, 1952, p. 28.

Prestressed bridge in the heart of the Pacific Northwest timber country the Albion Creek Logging Co. has built a prestressed concrete bridge to carry heavy logging traffic. Crossing a fork of the Calawah River, 45 miles west of Port Angeles, Wash., the bridge has a 65-ft center span and two 30-ft side spans; it cost $24,000. It was designed by Harry Powell and Clark Eldridge, Seattle consulting engineers, and erected by Lidral Construction Co., of Seattle.

ONLY FINISHING TOUCHES remain for Ottmarsheim power plant and locks to present a completed appearance. The locks (left) provide two parallel chambers 600 ft long and 75 and 40 ft wide respectively. A boat or tow can be locked through their 54-ft lift in 11 min.

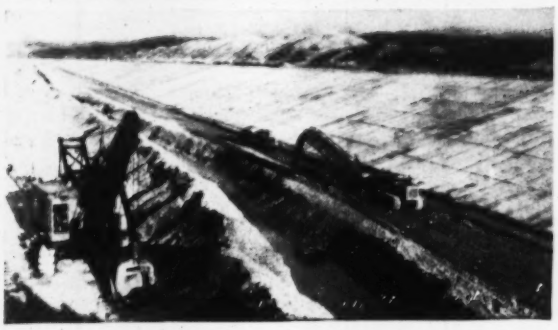


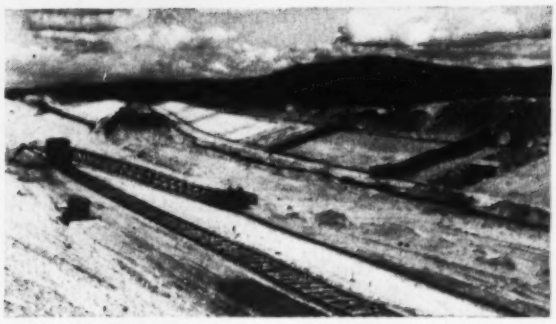
TURBINE AND INLET FORMS being installed for one of the four 52,000-hp Kaplan units in the power plant. They will be connected to 44,000-Kva generators. Bypassing of the turbines is done through 24 valve-controlled ducts in the foundations to minimize turbulence in the ship channel.

Power on the Rhine for France

Before this year is out France will have installed the last two 44,000-Kva generators in its Ottmarsheim power plant built since the war on its bank of the upper Rhine River. The first two generators, installed last year, are now in service as is the navigation canal on which the power plant is located.

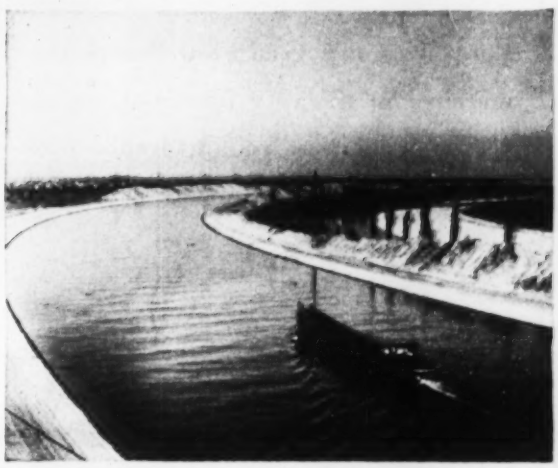
Ottmarsheim is part of a great project initiated in 1925 to parallel the Rhine with a navigation canal from Basel at the Swiss border to Strasbourg. In this distance of 75 miles, a 350-ft drop will be utilized by eight power plants, each flanked by locks to raise and lower the ships and barges. The first 3 miles of canal and a power plant at Kembs were completed in the 30's. Nine more miles of canal and the Ottmarsheim power plant constitute the present phase. The entire project for which the third phase is now under design, is usually referred to as the Alsatian Canal. Electricite de France, the national power authority, is in charge of the work, and the contractor group is Societe des Grands Travaux de Marseille.





HEAVY EXCAVATING AND LINING EQUIPMENT, much of it of U. S. make, built the nine miles of canal which is located on pervious sand and gravel. Both cut and raised embankment are involved, the latter rising to 35 ft above natural ground level and having 50-ft wide crests and 3:1-slopes. Four types of lining are used: concrete slab on the bottom; lightly reinforced concrete on excavated banks; flexible prefab vacuum concrete mats on embankment; and riprap on the excavated tailrace banks.

COMPLETED OTTMARSHEIM CANAL (below) closely parallels Rhine for most of its length. The job required 25 million cu yd of excavation, 8.7 million yd of fill, 965,000 cu yd of concrete and 18.8 million sq ft of lining. During the four-year construction period the maximum labor force was 3,700.



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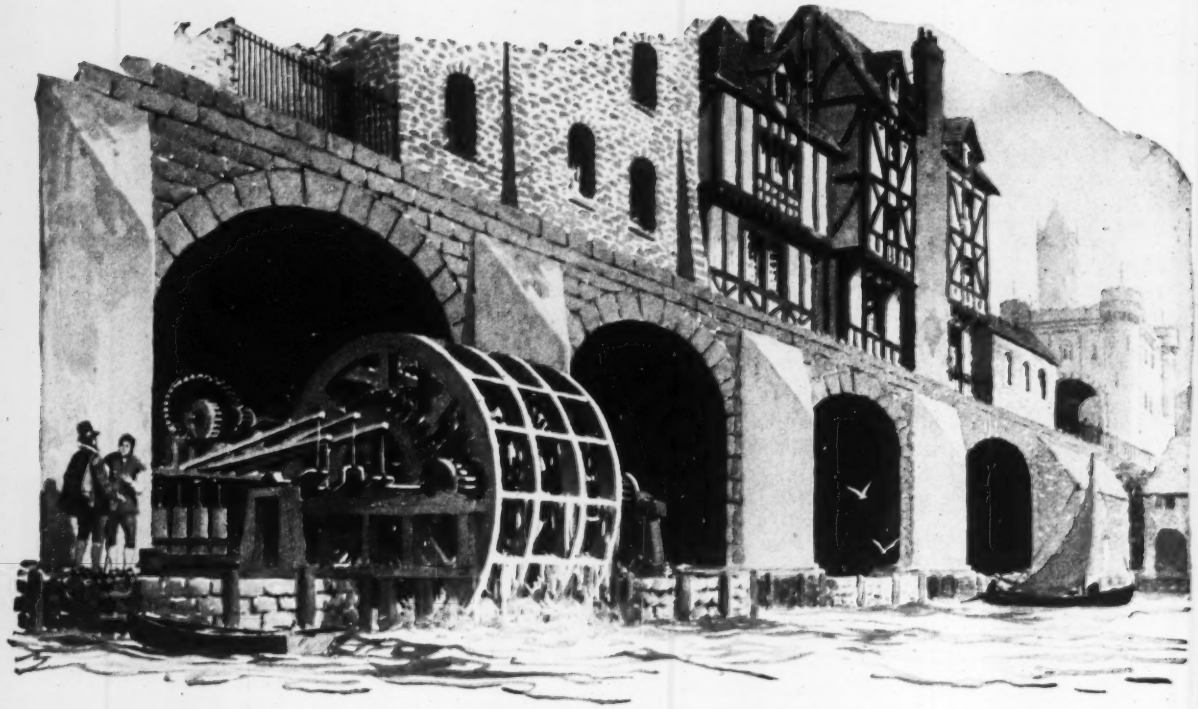

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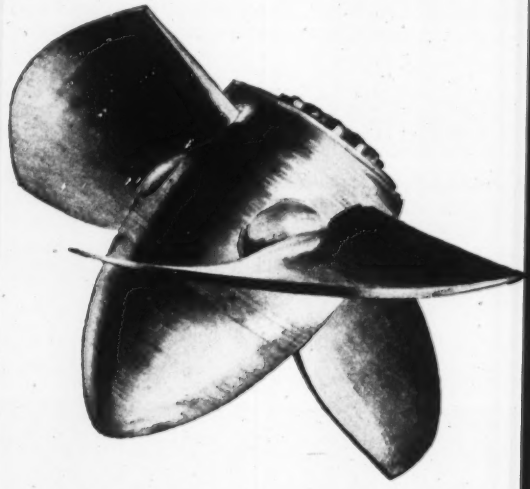

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Photos by William E. Becker

AMBUKLAO DAM, contract for which has just been let to the Guy F. Atkinson Co. for $22 million, will store water for flood control and irrigation in this area. Harza Engineering Co. is the designer.

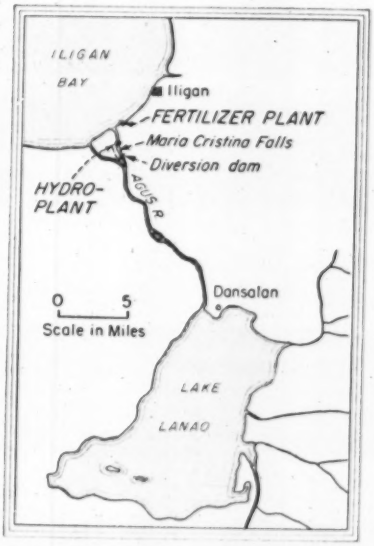
Philippines push their hydro program

New projects include a rockfill dam and an underground power plant at one site, harnessing of waterfall at another

AT TWO SITES about as far apart as they can be found in the 900-mile north-south reach of the Philippine Islands, the new republic's National Power Corp. is currently carrying out its mandate to provide the nation with hydro power as an offset and substitute for steam power used at present that has to be generated with imported fuel.

One project is located on the northernmost island of the chain—Luzon—and is about 150 miles north of Manila. The other, on the southernmost island, Mindanao, is 450 miles south of that city. These two projects, plus an expansion of the large Caliraya project in the vicinity of Manila and the small Talomo project for the city of Davao in Mindanao, add up to a substantial start on a program that envisions a capacity of 1,600,000 hp in several dozen hydro plants, scattered throughout the islands. The National Power Corp. has received a $20-million loan from the Export-Import Bank to aid in financing the work. The bigger of the two new projects—and a notable one in several respects—is Ambuklao on the Agno River in Luzon. At that site construction is under way on a 430-ft high rockfill dam that will require over 8 million cu yd of material, and on an underground power plant that will be equipped with three 25,000-kw generating units. Power from this installation will be used in the nearby city of Baguio, the surrounding mining region, and the Lingayen Gulf area and later sent to Manila over 230,000-volt lines.

The southern project in Mindanao is on the Agus River, and will consist of a 25,000-kw power plant at the foot of the locally famous Maria Cristina Falls. Only a few miles from the small seaport of Iligan, the power plant is planned to supply a new 50,000-metric-ton ammonium sulphate fertilizer plant being built near that town by the National Power Corp.



MARIA CRISTINA FALLS PROJECT is fed by a large lake, and its first 25,000-kw unit will serve a new fertilizer plant, also built by the government.

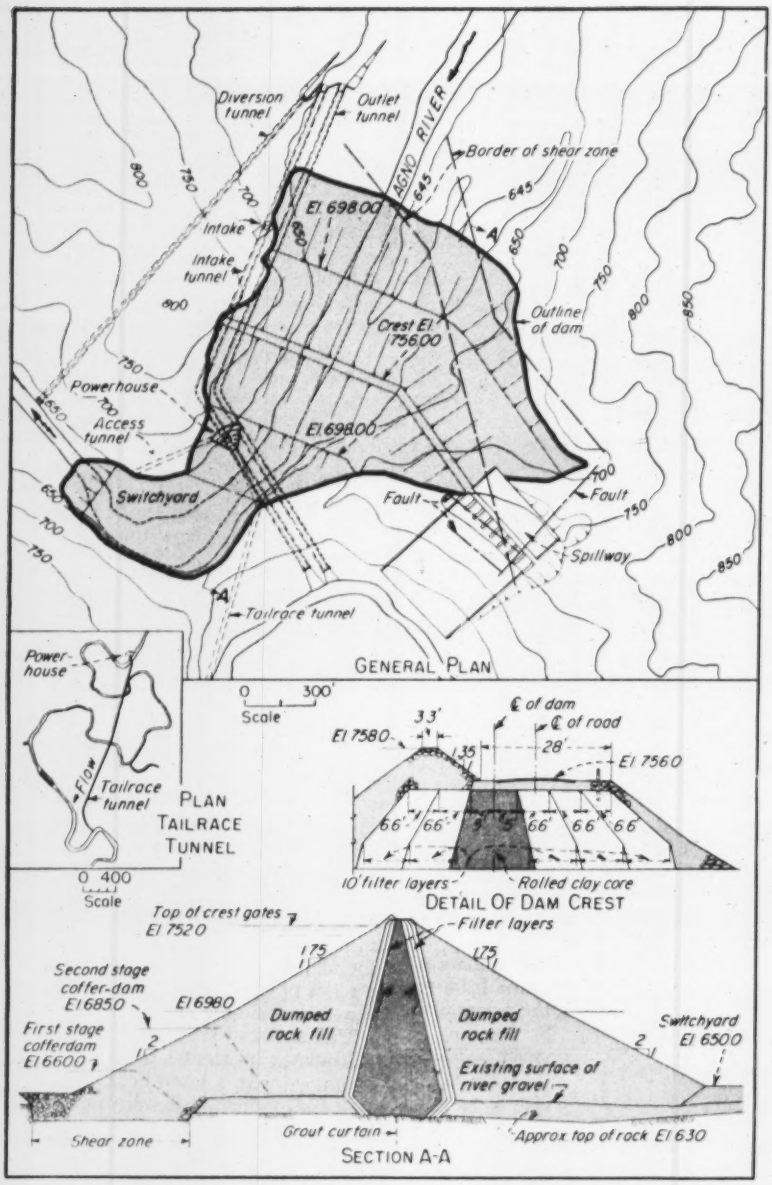
• **Huge rockfill dam**—Ambuklao Dam on the Agno River in Luzon will be one of the largest and highest rockfills in the world. As shown in the accompanying drawing, it will contain a central impervious core of rolled clay, (totaling 1,230,000 cu yd), five filter layers of sand and gravel (two upstream and three downstream) requiring 594,000 cu yd, and a 6,600,00-cu-yd fill of quarry rock and river gravel. This huge volume (8,324,000 cu yd) is coupled with a 430-ft height. Tacoma's Mud Mountain Dam is 425 ft high, but volume is less than Ambuklao.

As to materials, large quantities of igneous rock can be quarried readily nearby, and there is a weathered mountain top about 1,000 ft above the river from which the impervious core material can be obtained. The only disadvantage of the site, according to the Harza Engineering Co., Chicago, designer of the project, is the presence of an ancient geologic fault, broken down by mountain movements to create a well-defined shear zone over which a part of the dam and a portion of the spillway structure must be founded. This shear zone offers the only important foundation problem, and it is planned to solve it by clearing off the area and covering it with well reinforced layers of gunite to a minimum thickness of 3 in. Other foundation preparation will consist of a series of grout holes across the spillway and along the axis of the dam.

The spillway is located in the left abutment adjacent to the dam. Equipped with a jump bucket (curved to a 40-ft radius) at the discharge end, the spillway will throw the water several hundred feet through the air to dissipate its energy before it strikes the river below. This ski-jump type spillway also eliminated several hundred thousand dollars worth of construction.

Despite the rather small drainage area (268 sq mi) a considerable volume of water will be available, both as a result of the high average rainfall and of extremely heavy periodic rains, the recorded maximum being 48 in. in 24 hr. For this reason the spillway design flood is very large—about 400,000 cfs. Eight spillway gates will be used, each about 40x40 ft.

The maximum flood of record is 165,000 cfs, and the planned diversion (through tunnels in the right abutment) during the construction period is 75,000 cfs. The National Power Corp. is assuming the risk of overtopping of the coffer-dam during diversion. Since there is extremely low flow in the river during the dry season no



WORLD'S HIGHEST ROCKFILL DAM is what Ambuklao promises to be. Also it will be one of the largest, requiring 8,000,000 cu yd of material. A large ski-jump spillway and an underground power plant are other notable elements of the project.

difficulties in dam closure are expected.

• **Underground power plant**—There will be three diversion tunnels. One of these later will be used for a reservoir outlet, and another to feed the power plant, which will be placed deep underground, in the diorite that forms the right abutment. The three 25,000-kw units that will be installed in the powerhouse will discharge into a common tail tunnel. The turbines will develop 39,500 hp at a maximum head of 572 ft.

Because of the depth of the underground power plant, the tail tunnel will have to extend about 1½ miles through igneous rock before it can be discharged into the river—at a point that is 100 ft below the river elevation at the dam site. In this route, the tunnel passes under several meanders of the river. Access to the powerhouse will be through two sloping tunnels which emerge downstream from the dam.

Ambuklao will be the first of several projected dams and power plants on the Agno. Highest up on the river, Ambuklao was chosen for the initial development because its storage could effect the most immediate control of floods and low season flow in the river, which, after it emerges from the mountains, waters a great agricultural plain that is visited alternately with destructive floods and droughts. Ambuklao also offered the only large reservoir site on the stream (200,000 ac ft), and in addition a favorable head condition for power generation because of the many loops in the river. The project will be able to deliver 330 million kwh annually or about one-fifth of the river's entire potential.

Because of the extremely high rate of erosion in the watershed, a thorough study, based upon extensive samplings of suspended sediment concentrations, was required to establish the life of the reservoir. It was only the relatively large size of the reservoir, compared with the drainage basin, that permitted economical development of power at the site.

At the present time one diversion tunnel has been completed (by the West Pacific Co. at a contract price of about $400,000) and construction of a 25-mile access road from Baguio is in progress under a $95,000-contract with Marscon, Inc. In addition a $1,440,000-contract recently has been let to Agvid Construction Co. for driving the tailrace tunnel.

Late last month the Guy F. Atkinson Co., San Francisco, was awarded the contract for the dam, spillway, and two 23-ft horseshoe diversion tunnels. The bid price was about $22,000,000. The power facilities are to be bid under separate contract, the advertising to begin about April 1. Present plans call for completion of the project in 1955, at a total cost of approximately $50,000,000.

• **Harnessing a waterfall**—The second hydro project that the National Power Corp. has under way is of an entirely different type than Ambuklao. Located in the southern island of Mindanao, it consists merely of a low diversion dam (38 ft) in the Agus River, an approach channel around Maria Cristina Falls, and a penstock that drops the water to a power station at the foot of the falls.

The initial power installation will consist of a single 25,000-kw generating unit, with another of like size to be added when industrial demand (at present non-existant) requires it. Use for the initial power is assured by the concurrent construction of a 50,000-metric ton ammonium sulphate fertilizer plant about 2½ miles away on the shore of Iligan Bay.

With power available it is hoped and believed that private industries will locate in the area. Should these hopes materialize, the power plant plans include provision for expansion to a total capacity of 200,000 kw, according to F. M. Zablan, acting general manager, National Power Corp. From a technical standpoint such a development is possible because of the

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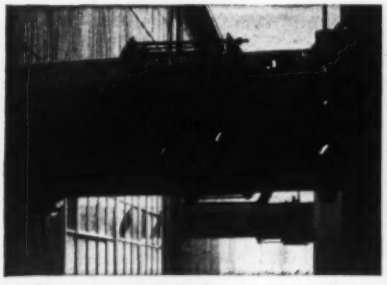

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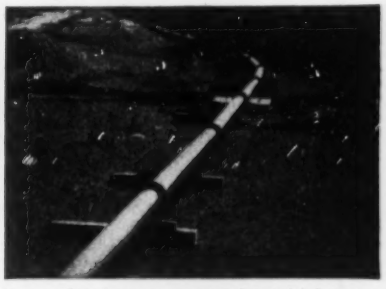

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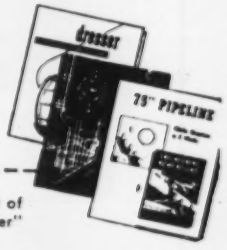

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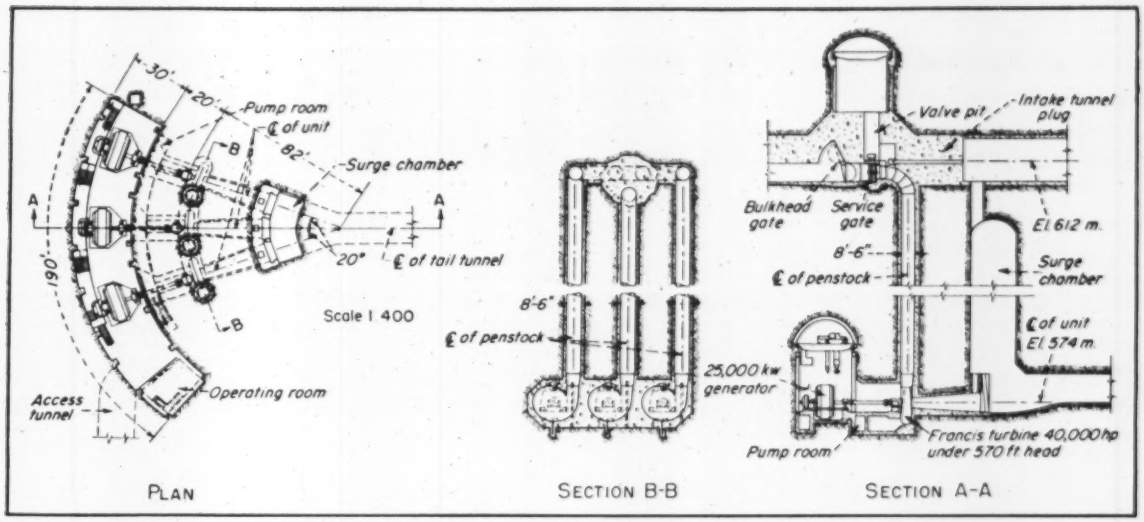


UNDERGROUND POWER PLANT at Ambuklao is about 180 ft below the base of the dam. The generator room, 36 ft wide, 54 ft high and 215 ft long, is radial in plan and contains three 25,000-kw units.

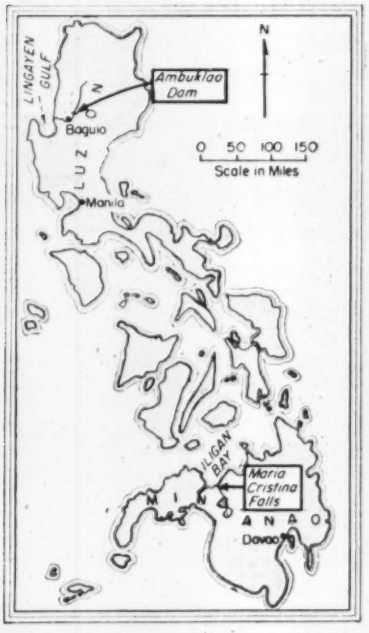
nature of the Agus River, which is supplied by a huge natural reservoir, Lake Lanao, 150 sq miles in area and located 22 miles south of the power plant site and at a 2,300 ft higher elevation.

Maria Cristina Falls are about 300 ft high, and by placing the diversion dam and intake some distance upstream a gross head of 520 ft is provided at the plant. Water flows a total distance of 2,770 ft from the intake to the power plant, first through an open channel to a surge tank on the lip of the canyon at the falls and then down a steel penstock to the turbine.

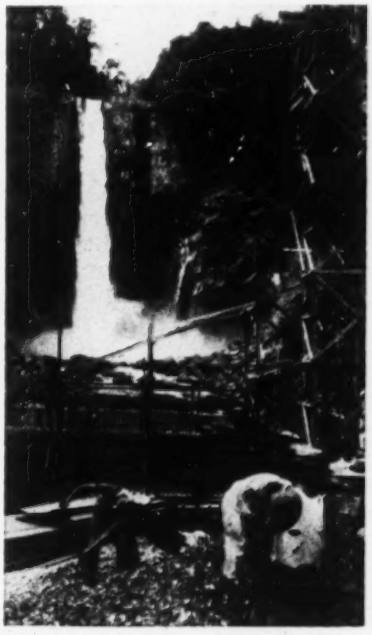
The power plant is placed directly below the falls but sufficiently far removed to be free of spray. For reasons of economy the building is of the simplest and plainest construction possible.

Rapid progress has been made on the project, and it is scheduled to be turning out power by the middle of this year. By that time also the fertilizer plant will be completed and ready to use the power. The total investment of the National Power Corp. in the two facilities is about $8,000,000.

Filemon Rodriguez is general manager of the National Power Corp., of which Pablo Lorenzo, secretary of public works and communications is chairman, and Vidal A. Tan, president, University of the Philippines, is vice-chairman.



THE PHILIPPINES government has spotted two new hydro projects at opposite ends of the country.



POWER PLANT construction below Maria Cristina Falls. Penstock will drop from cliff at right.

Wind currents studied for smog solution

Los Angeles County Air Pollution Control District has taken a new tack on the county's smog problem—study of wind currents to determine best location for future industrial development.

The District now receives over 1000 reports daily from 50 observation points in Southern California. Because of the many directions taken by wind in the area, and the fact that the pattern seldom repeats itself, probably three years will be required to chart currents with enough accuracy to take zoning action.

Los Angeles basin's winds are weaker over-all than in any other industrial area in the country, according to the district. The point is to take best advantage of what wind there is. Nothing can be done about existing plants, but future plants could be located to avoid, for instance, unnecessary concentration of one kind of pollutant in one wind current pattern.

The wind study is in addition to control measures on emission of pollutants at the source.

PLENTY OF ROOM in this belled-out footing. Sketch shows size of Texas A & M college building foundation, which was excavated mostly by machine.

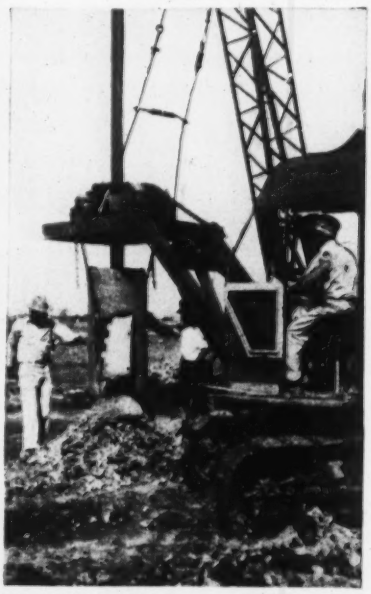
Spadework is last in big footing

Cyril S. Adams
Consulting Engineer
Houston, Texas

Machines for drilling and under-reaming spread footings have been tackling ever-larger assignments since the technique was introduced a few years back. But a job at the A and M College of Texas recently stumped one of the larger machines—at least it forced the contractor to supplement his machine work with a small amount of hand work.

The design for four foundations of a new field house called for 30-in. shafts, belled out at 40 deg from the vertical to 15 ft 9 in. dia at the bottom, which was to be 21 ft below grade. A straight-sided under-reaming tool for a 9-ft bottom diameter is the largest that can be inserted through a 30-in. hole, so it was necessary to ream out to 9 ft at footing grade. Then two workmen with air spades completed the bell-out to 15 ft 9 in. The photograph gives an idea of the footing size.

Here is the full cycle of operation: A crawler-mounted drilling machine (converted dragline rig) was spotted with its drill shaft over the footing center. A 30-in. auger drilled the full depth to bottom grade of the footing. Then the special reaming tool (shown in the second illustration) was attached to the drill stem to perform the bell-out and 9-ft hole to the bottom, as described previously. The two workmen who finished the footing were assisted by a man on the surface, who hoisted the muck. The machine part of the work required only the drill operator. One footing was completely dug in 8 hours.



DRILLING RIG is a modified dragline. Under-reaming cutters retract into cylindrical section, for removal from hole.

Pre-assembled reinforcement was inserted quickly in the stem and the hole took 35 cu yd of concrete, using undisturbed earth as the form throughout.

Some of these footing have been made in less favorable locations through water-bearing sands and shifting soils that require casing the stem with steel cylinders in the trouble zone, but this work adds only a small percentage to the overall cost. The casing is salvaged each time by withdrawing it as the concrete is placed.

The belled, or spread space must be reamed in a soil that will hold its roof until concrete is placed, although this condition can be crowded by using drilling tools of proper shape and by placing concrete immediately after completing the under-ream.

The drilling contractor, Bel-Toe Foundation Co., Houston, has developed equipment and tools that have drilled stems 48 in. dia, with under-reams 13 ft 8 in. dia, 35 ft deep. This is all machine digging. Depths as great as 75 ft are feasible in the large sizes. The writer has served as engineering consultant to D. O. Talley, owner of Bel-Toe, on the shapes of under-reaming tools and in the design and development of the drilling machinery.

On the crawler-mounted machine, rotary motion is imparted to the drill stem by a chain drive from a power take-off on the excavator chassis. Rigs that are used for lighter duty (smaller holes and under-reams) are mounted on trucks.

W. E. Simpson Co., San Antonio, designed the footing for the Texas A & M job.

Pipeline extension to move Canadian oil year 'round

A $76-million extension will be made this summer to Canada's Interprovincial Pipe Line System. All but about six miles of the 30-in. line, running 635 mi from Superior, Wis., to Sarnia, Ont., will be laid in the United States.

The extension will make it possible to move crude oil from Edmonton, Alta., where the original section begins (ENR Jan. 8, 1953, p. 60), to Sarnia, eliminating a winter bottleneck caused when ice prevents tanker movements in the Great Lakes.

The American section of the extension will be built by Interprovincial's U. S. subsidiary, Lakehead Pipeline Co., and will run from Superior eastward across Michigan's upper peninsula, south across the Straits of Mackinac, thence southeasterly to Sarnia. When finished, the 1,765-mi line will be the world's longest for transmission of crude oil.

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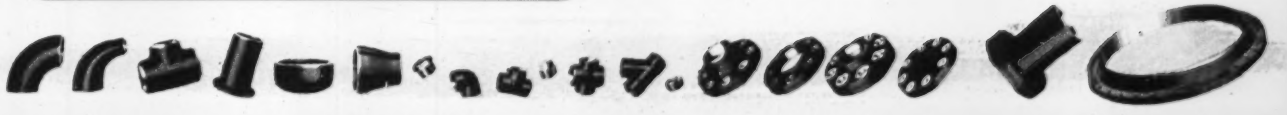

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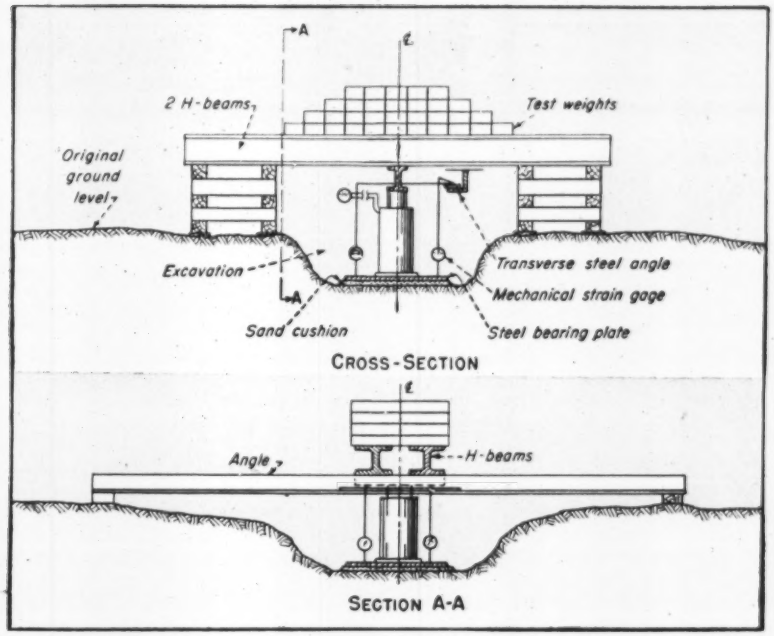


SOIL LOAD TEST was made with a hydraulic jack acting against a steel bearing plate and reacting against loaded beams, strain gages measuring settlement.

Bigger soil-test plate permits bigger pressures under footings

The effect of size of bearing plate on measured bearing capacity was clearly indicated in tests made to determine the allowable soil pressure for footings for the Elmhurst General Hospital now under construction in the Borough of Queens, New York City. When a 2-ft square plate was loaded, pressure of only 4 tons per sq ft could be allowed under the provisions of the New York City building code. But when a 4-ft square plate was tried, tests showed a design pressure of more than 6 tons per sq ft could be permitted.

• **Code requirements**—The code requires that a soil test be made in two steps, in each of which the load must be distributed over an area of at least 4 sq ft. In the first step, the design unit pressure is applied and readings taken to determine the rate of settlement. This load is maintained until no settlement is noted for a period of 24 hours. Next, a 50% overload is applied, and again readings are taken until no settlement is observed during a 24-hour interval.

The test is considered unsatisfactory if the design load shows more than a ¾-in. settlement, or if the increment of settlement that is found under the 50% overload condition exceeds 60% of the settlement obtained for the design load.

• **Test setup**—Borings taken at various points on the hospital site indicated that the subgrade is principally compact, coarse sand with traces of clay and silt. Excavation showed the presence also of some hardpan.

Loads were applied to the soil with a calibrated hydraulic jack acting against a rigid steel bearing plate. The jack reacted against a steel I-beam attached to a pair of H-beams loaded with I-ton pigs. Carrying a total load of 200 tons, these H-beams were supported on cribbing that was spaced 16 ft apart.

Settlements were measured with two mechanical strain gages, which permitted direct readings to 0.001 in. The gages were attached to a steel angle that was independent of the loading equipment and supported outside the area influenced by the load. The average of the readings of the gages was taken as the settlement.

• **Higher pressure permitted**—Soil tests were carried out first for the nurses' quarters and staff house. These were made with a 2-ft square plate. The result was that the footings had to be designed to withstand a 4-ton per sq ft pressure.

For the main building, however, tests were made with a 4-ft square plate. Though soil conditions were apparently the same as for the tests with the smaller plate, the later tests indicated that footings could be designed for 6 tons. Because of the large area of the structure, this made possible a considerable money saving on the footings.

This experience seems to contradict the contention in some textbooks on soil mechanics that for non-cohesive soils, settlement under a given pressure is nearly independent of the size of loaded area. (Theoretically, also, for highly cohesive soils, settlement is proportional to width of loaded area; so if two bearing plates of different size exert the same unit pressure, the larger will settle more than the smaller.)

However, job engineers believed that the behavior of building footings would be in better agreement with the tests with the larger plate than with those with the smaller plate because the sizes of the footings are closer to that of the larger plate.

Footings vary from 4-ft square to 12-ft square and are spaced about 22 ft on centers.

The 900-bed Elmhurst General Hospital is being built at a cost of $14 million for the New York City Department of Hospitals, by the Department of Public Works, Frederick H. Zurmuhlen, commissioner. To be 11 stories high, the building is irregular in plan with five wings containing wards projecting from a central service core. It will have a structural steel frame fireproofed with lightweight-aggregate concrete. Exterior walls will be glazed brick backed up with cinder block. Floors will be lightweight concrete, designed for a total load of 118 psf, of which 50 psf is live load.

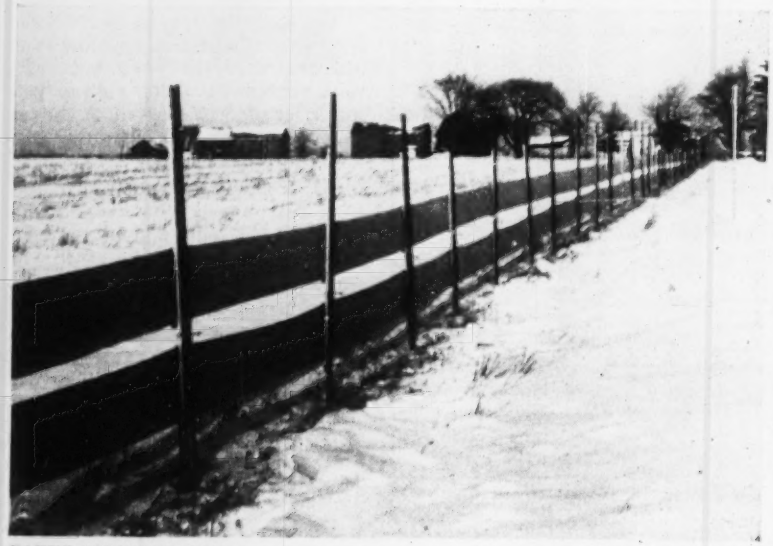
York & Sawyer and Felheimer & Wagner, both of New York City, are the architects-engineers. Depot Construction Co. is the general contractor, with G. Schimenti, president, and Daniel Seaperoth, general superintendent, in charge of the job.

Oops! . . .

The Interstate Construction Co. of Louisville, Ky., has a red face—and a little less of that green stuff.

It cost them $550—by a court award—to make good damages incurred while putting siding on a house. They did a good job—but it was the wrong house.

The job was ordered for 3760 Powell St. in Louisville; the company put the siding on 3765 Powell. The court—in a suit brought by the owners of 3765—limited the penalty to $400 for direct damage to the house and $150 for damage to the yard from stacking the siding.



PAPER SNOW FENCE in a test installation made in Michigan during the winter of 1951-52. Three strips of paper are used at some locations.

Michigan expands test of paper for snow fence

The Michigan State Highway Department has set up 19 miles of paper snow fence, continuing a test program begun in a small way during the winter of 1949-50. About five miles of paper fence were erected during the winter of 1950-51.

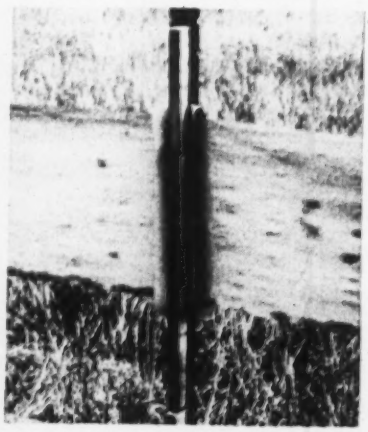
Two or three strips of kraft paper 12 in. wide are used, the number depending on local conditions. Each strip consists of two layers of heavy kraft paper cemented together with asphalt and reinforced with hemp or glass fiber.

To secure the paper strips to the posts, they are pressed into the groove of a standard steel fence post by strips of soft wood, after which the wood strips are wired to the post. This method has been found to result in less damage to the paper than stapling the paper to wooden strips attached to the posts, as was done initially. For best results, the paper must be stretched taut so that no sagging occurs.

The paper conforms to ASTM specifications for waterproof paper for curing concrete (C 171-49T). For the Michigan tests it was supplied by the Sisalkraft Corp., Chicago, in 12-in. wide strips, 300 ft long, ready for assembly in the field.

Posts for the test fences erected to date were spaced 8 ft apart instead of the 10-ft spacing used on standard slat snow fences. However, increasing the spacing to 10 ft is now under consideration, according to Charles M. Ziegler, head of the Michigan State Highway Department.

Paper snow fence tested in previous years stood up well under storm conditions, including winds estimated as high as 70 mph. The serviceability, Mr. Finney says, depends to a great extent on care exercised in erecting the fence. Principal damage has been done by loose stock and by children.



THE PAPER is secured to the fence posts by strips of wood pressed into the groove of the post and wired. Folded strips of paper are slipped over the fence band to protect it against injury by abrasion.

The highway department engineers estimate that the paper costs one-fifth as much as the equivalent footage of standard wooden-slat fence, also that large volume purchases of craft paper will reduce the costs to an even lower figure. Much more fence can be handled in a single truck load, handling costs are less, and storage space requirements are greatly reduced.

Fresh paper has been bought each fall for the test installations, but plans now are being made to determine whether the paper will not serve for at least a second season if it is taken down carefully and stored under favorable conditions.

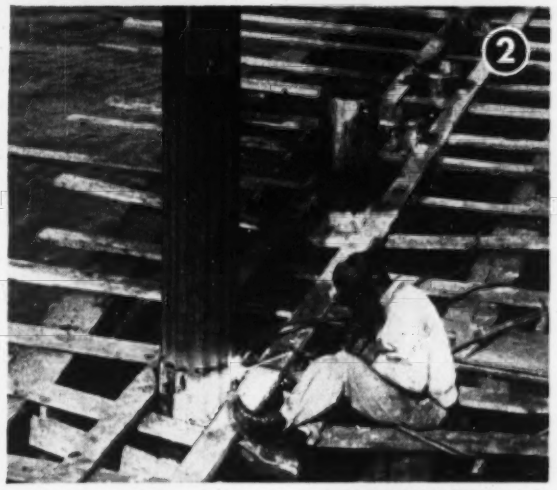
Paper as a substitute for wooden slats in snow fences has been tested experimentally in other states and in Canada. In the Canadian tests, a coarse mesh, 48-in. wide, was used, being woven from twisted strands of paper impregnated with paraffin or creosote. The tests were conducted during the winter of 1949-50 by the Division of Building Research of the National Research Council of Canada at Ottawa, Ont. No failures occurred in the field tests of the heavy creosote-impregnated mesh, but there was a considerable sag between the posts, which reduced the effectiveness of the fence during the latter part of the winter.

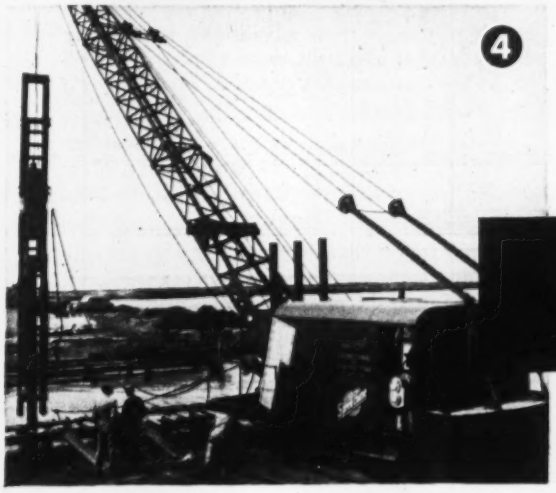
Bill would restrict Washington rainmakers

Professional rainmakers and cloud driers would be controlled by a Washington State Weather Modification Board whose establishment is proposed in a bill now before the state legislature.

The board would have power to issue licenses to those applicants who are able to prove they possess sound scientific knowledge of meteorology. Licenses would cost $100 yearly, with each separate operation necessitating a separate permit costing 1½ percent of the cost of the operation. Three weeks notice by advertising would be required in affected areas.

Operators would be required, by this bill, to disclose their methods and give reasonable proof they were not polluting the air with dangerous materials.





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For complete information, for more evidence that you'll be 'way ahead with Monotube piles, write to The Union Metal Manufacturing Co., Canton 5, Ohio.

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Today's sludge blanket Precipitator is the most advanced and efficient type of coagulation, precipitation and settling equipment. It is particularly economical for the removal of turbidity, color, taste and odor; and for softening water, reducing alkalinity and removing silica by the cold lime-soda process.

The secret of its amazing efficiency and adaptability is the full utilization of the suspended sludge-blanket principle. Upward filtration through a blanket of previously formed precipitates results in the complete usage of lime and other chemicals . . . *saving up to 40%.*

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In addition to all these advantages, a one hour detention period gives the same results as 2 to 4 hours in the conventional type . . . *making for a more compact plant.*

For full information write to: THE PERMUTIT COMPANY, Dpt. ENR-4, 330 W. 42ND STREET, NEW YORK 36, N. Y. or to Permutit Co. of Canada, Ltd., 6975 Jeanne Mance St., Montreal.

P.S. Don't forget that Permutit can also provide tailor-made equipment to convert old conventional settling basins to the modern sludge-blanket Precipitator.

WATER CONDITIONING HEADQUARTERS FOR 40 YEARS

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Kunio Kido, left, project engineer, and Keith K. Wallace, design engineer, sit on the underground bridge built to carry a 30-in. water main through muddy sub-surface. They are on the level where the main was later laid. Pipe under crosswise saddle blocks was installed temporarily to aid in draining the trench.

Sub-surface trestle carries water main

A sub-surface "trestle" 800 ft long helped solve the problem of carrying a 30-in. cast iron water main through a muddy sub-surface in Honolulu, T. H.

Test borings for a new main revealed existence of a series of soft mud lakes from 20 to 30 ft deep below a stable coral surface. The coral had been dredged up more than 30 years ago when a drainage canal was under construction and old duck ponds were filled in to make part of the modern Waikiki district.

Removing the vast mud areas and refilling them with solid material would be too expensive, according to the Honolulu Board of Water Supply. The answer, devised by Keith K. Wallace, design engineer for the board, was to dig a trench and line it with timber sheathing to hold back any muddy ooze.

When the top of the mud pool was reached, timber piles, 6 x 12 in., were driven from 20 ft to 30 ft through the mud until they were firmly stabilized. Workmen then drove two parallel rows of piles 4 ft apart inside the sheeted trench.

The piles were connected by continuous 6 x 12 in. stringers, and crosswise connections were made by 8 x 8 in. saddle blocks, resting on the stringers. The 30-in. water main was laid on the blocks, then covered with coral fill.

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OUR ENGINEERING DEPT. will recommend, design and build special equipment for any special purpose.

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HERE ARE HELTZEL'S NEW *COMPLETELY AUTOMATIC ELECTRONICALLY CONTROLLED* BATCHING PLANTS...

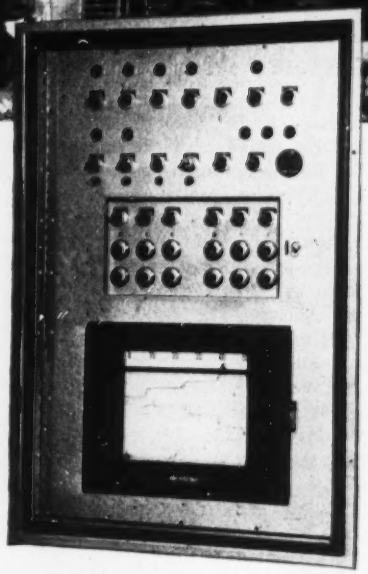
Two new Heltzel Batching Plants at work on the Ohio Turnpike. Built to conform with Ohio Turnpike Commission specifications, the Cement Plant (left) has a 400 bbl. capacity with a 375 bbl. recirculator. Three-compartment aggregate Plant (right) holds up to 200 tons.

Here's real news for contractors who want batching equipment that will do more with less labor. The new electronically actuated fully automatic Heltzel plants designed for road builders, truck mixer and central mix operations.

Push button operated by one man these job-tested plants will batch up to 250 yards of perfectly proportioned batches per hour . . . with 29 separate batch combinations immediately available to the operator. Each batch, time and amount electrically recorded for easy daily tabulation.

Portable, the plants were designed for quick set-up and knock-down, easy over-the-road handling. For permanent installation Heltzel's combination cement-aggregate plant would be used instead of two separate plants.

For additional information write or call **The Heltzel Steel Form and Iron Co., Warren, Ohio,** and ask for Bulletin O-21.



Push button panel with recording equipment. Each of the 29 batch selection buttons controls a completely different mix. Panel will be wired to suit your individual requirements. Recording equipment optional.

— Naturally It's A Heltzel *Product —*

CROSSETT, ARK. converted its dirt streets to soil-cement pavement, then added the curbs and gutters.

City adds low-cost curb, gutter

Curb-and-gutter construction usually precedes, or at least progresses simultaneously with the construction of new street pavement.

But Crossett, Ark., proved it can be done the other way, in an example of street construction in which the curbs and gutters were built last.

It also serves as a good example of an engineer giving the town what it wanted—in this case a comparatively inexpensive road—with the realization by the town—at a later date—that new roads require a curb and gutter.

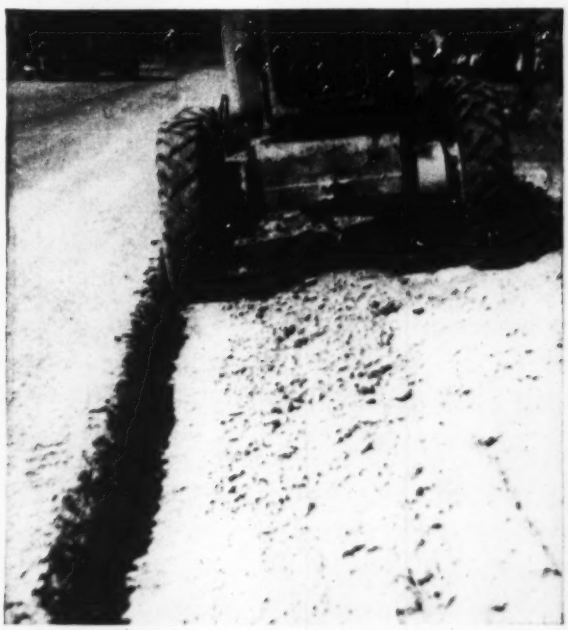
This is how it happened:

• **Short of funds**—When the citizens of Crossett—a town of 6,000 population on US Highway 82 just north of the Arkansas-Louisiana state line—decided to improve their dirt streets they found that they had just enough money to finance the new paving, but nothing for new curbs and gutters.

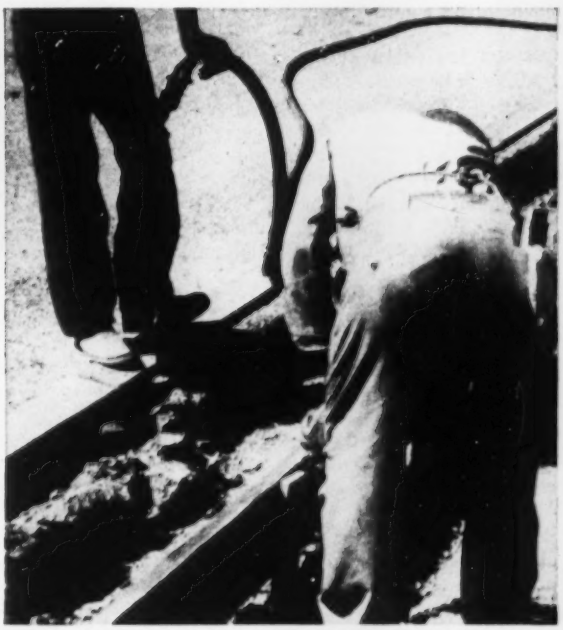
So they authorized the construction of a gutterless and curbless 70-block system of soil-cement streets, using portland cement combined with the dirt in the existing rutted streets. A bituminous surface was applied to the soil-cement base course.

After the street construction had gotten pretty well along, however, the property owners realized that suitable curbs and gutters were a "must." So they raised additional funds and proceeded to install the lip-curbs and gutters after completion of the soil-cement pavement.

• **How it worked out**—This reversal of normal construction procedure turned out well for both the city and the contractor. A total of 53,000 lin ft of curb and gutter was installed at a cost of $1.375 per lin ft. Production ranged between 1,700 and 1,800 lin ft per day.



MOTOR GRADER cut pavement to a rough line, then . . .



AIR-CHISELS trimmed it true while outside forms were placed.

The project also demonstrated that with relative ease curbs and gutters can be fitted to existing soil-cement pavements. In fact, the entire 70-block project met with such public approval that an additional 35 blocks were paved, curbed and guttered.

• **How it was done**—Here, briefly, is how they did it: First, a motor grader cut an approximate line along the edge of the soil-cement pavement, usually requiring two or more passes. Workmen then laid 1x6-in. boards end-to-end along the surface of the pavement to mark the final cutting edge and serve as a rail for the subgrader and finishing template.

A vertical cut was then made with a pneumatic chisel, completely through the soil-cement pavement, leaving an exposed face—the junction between pavement and gutter. At the same time a crew set the outside timber forms for the back of the curb.

The exposed face of the pavement was used as it was—without further forming—as one side of the curb-and-gutter form. The new road had sufficiently solidified so there was no tendency for the pavement to slide into the open trench.

The bottom of the trench for the curb and gutter was excavated to final grade and checked for proper depth with a subgrade template traveling on the outside form and the boards laid on top of the pavement.

The subgrade template was fitted with four flanged wheels to provide positive control during travel. The wheel axles and two pieces of channel made up the frame; the template itself was supported by an iron bar running between the angles at a point about midway between the axles.

Mixed-in-transit concrete was used in all the curb and gutter work, the concrete being chuted direct from the mixer trucks. Final operations included screeding the concrete to the required curvature of the curb and gutter, and finishing it by hand troweling.

• **Men in charge**—K. W. Lefever, consulting engineer, Little Rock, was in charge of the project, and G. S. Davis was his resident engineer. Ben Hawkins, Lake Village, Ark., was the general contractor, and the Delta Paving Co., Jackson, Miss., was the subcontractor. Gregory Root was general superintendent; R. A. Raborn, superintendent; and W. W. Harris, soil-cement superintendent. Construction photographs and data on the project were furnished ENR by the Portland Cement Association.

SUBGRADER TEMPLATE checked trench-depth, then . . .

TRANSIT-MIXED concrete was chuted into place, and . . .

SCREEDED AND TROWELED to proper curvature and finish.

ROADS

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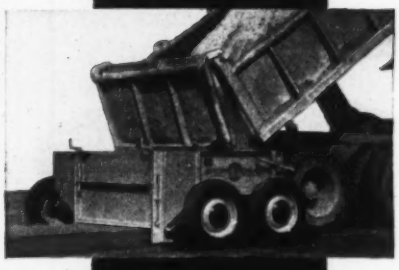

WOOD Spreader Box

Attached in 30 seconds to a dump truck, the Wood Spreader Box measures and forms materials into accurately proportioned windrows as the truck moves along. Windrow capacities of 2 to 8 cu. ft. are quickly and easily controlled by adjustable tailgate. The Wood Spreader Box eliminates guesswork in measuring imported materials placed on sub-grades or bases.

Illustrated above is a Model 42 Wood Roadmixer mixing soil-cement base course for a superhighway with production of 250 tons per hour.

It eliminates the central plant — it mixes native or imported materials — it handles emulsion, road oil, soil-cement or other chemical mixes at less cost per square yard or per ton than any other **single** piece of equipment on the market.

For facts, see any Wood distributor or write us direct for literature and prices on Wood Roadmixers, Preparizers, Windrow Proportioners, Spreader Boxes and Tank Trailers.

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Transports, elevates and places concrete in one operation.

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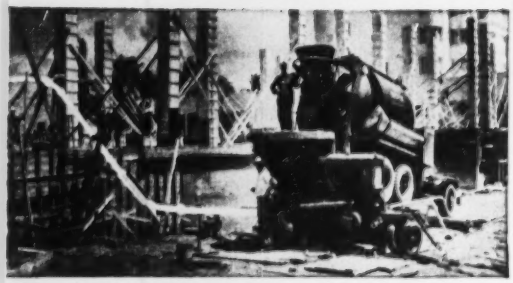
No trestling, scaffolding, towers or expensive buggy runs.

cuts "dead time"
Places concrete while plumber, carpenters, formsetters, etc., are at work. No interference. Steady flow.



cuts non-productive moving time
No need to move mixing equipment. Just spot Pumpcrete at best place and leave it there.

Find out how pipe line flexibility can pay off on your jobs. See your local Rex Distributor or write to Chain Belt Company, 4633 W. Greenfield Ave., Milwaukee 1, Wis.

CHAIN BELT REX COMPANY®

CONSTRUCTION MACHINERY

Slum clearance

Activity continues in many cities

Slums continue to get major attention throughout the country—mostly with the aid of federal funds through the Housing Act of 1949.

So far, federal funds (under Title I) total $230 million—divided among 257 cities and towns—have been reserved with $70 million of that amount definitely committed. The remaining $160 million is reserved for projects which have not yet reached final approval.

Among those in the works now:

• **Detroit**—The city has acquired 129 acres of slums in the Gratiot area. Three-fourths of the residents have been relocated and half of the buildings torn down. Six acres of the land has been built up with a hospital addition to the Wayne University Medical Center. Most of the remainder will be redeveloped by private enterprise for rental housing, but some parts of the site are reserved for commercial, industrial, parking and play space.

• **Little Rock, Ark**—The housing authority of the city has bought up 29 acres of land in a ten-block slum area and has signed contracts for razing more than half of the old structures.

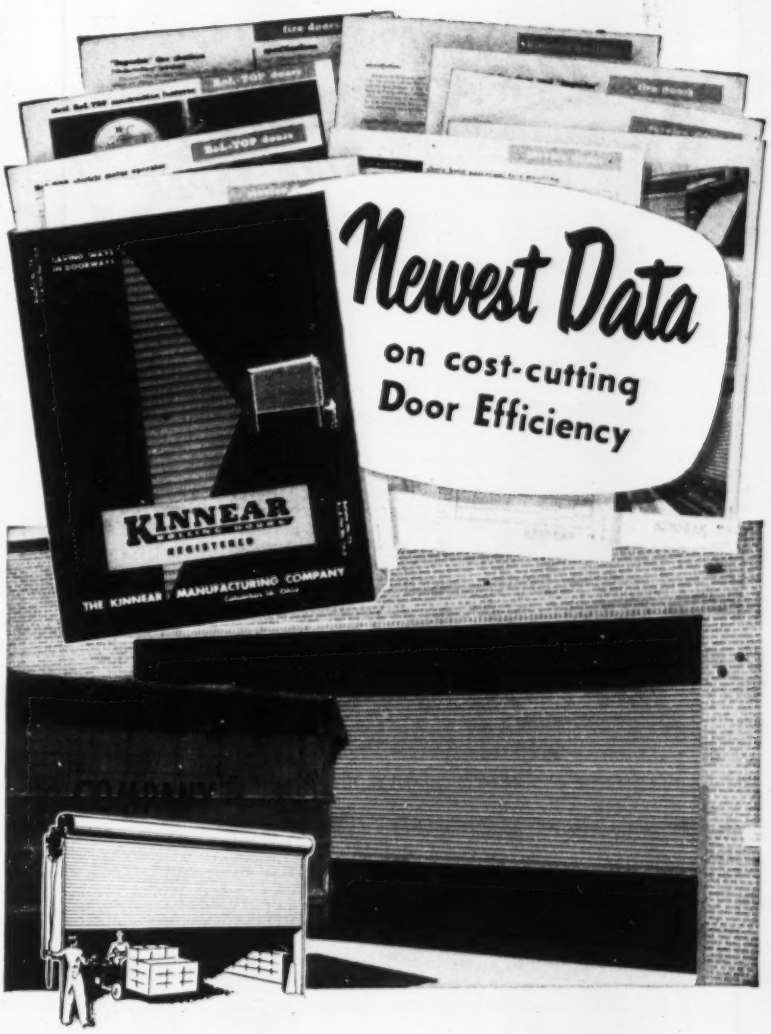
Housing cannot be demolished until occupants are relocated. Private developers will build housing on most of the site—with some commercial properties to take care of the needs of the new tenants. Plans also include public uses, mainly schools.

• **Jersey City, N. J.**—This city is now buying a 13-acre blighted site to be developed privately with 1,100 apartment units (in elevator buildings). The city plans to acquire another 16-acre area for private development—1,350 apartment units—for middle-income families. There will be related shopping and community facilities.

• **Nashville, Tenn**—Acquiring 65 acres to eliminate a slum area on three sides of the state capitol. The capitol grounds will be expanded by the state; the rest of the area will go for commercial and light industry purposes.

• **New York City** has seven active projects. Fort Green Project is the latest; it carries a federal allocation of $2.75 million.

Thus far, sixteen cities have proj-



KINNEAR Steel Rolling Doors
answer widest range of door needs

This all-new 1953 catalog gives you full, up-to-the-minute information on how to save maximum space, cut costs, boost efficiency and get more protection at doorways, in old or new buildings. In addition to complete data on Kinnear Steel Rolling Doors — the doors with the famous, *Kinnear-originated* curtain of interlocking steel slats — it tells all about Kinnear Steel Rolling Fire Doors, sectional type Kinnear Wood and All-Steel RoL-TOP Doors, and the protective Kinnear Steel Rolling Grilles. Write for your FREE copy TODAY!

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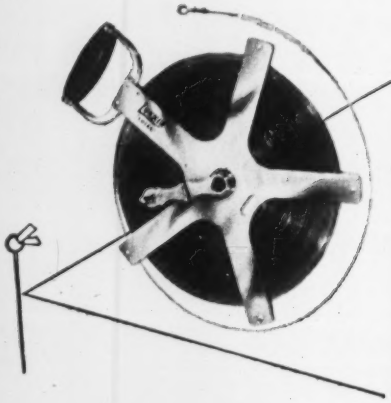
LUFKIN "LUCAS" MINE TAPES
With New 5-Arm Reel



Made of highest grade tinned tape steel. Graduations and figures deeply stamped into Nickel-Silver sleeves that are securely soldered to the line. New improved five-arm reel made of heavy gauge steel, nickel-plated. Tape roller in each arm.

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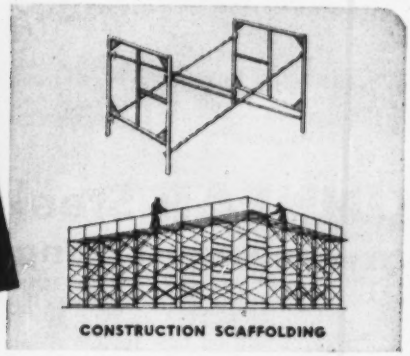

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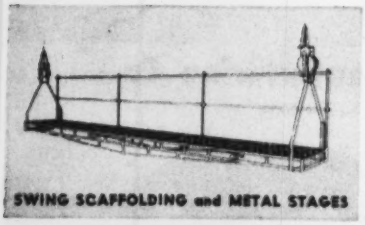
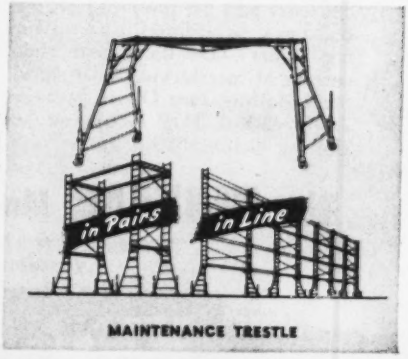


SWING SCAFFOLDING and METAL STAGES



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BIL-JAX, INC., Archbold, Ohio, U. S. A.

MUNICIPAL

ects actively under way—five are cities of over a million population; the eleven other localities hit every population bracket from the half-million to million class to the less-than-25,000 size.

Sewer charges held illegal by Alabama court

A sewer service fee levied in Montgomery, Ala., last September was held unconstitutional by the Montgomery Circuit Court. The fee was termed "discriminatory" but the court ruled that collection of the fee may continue pending outcome of an expected appeal to the Alabama Supreme Court.

The basis for the ruling is the difference between assessed and non-assessed sewers. The court said the city water works and Sanitary Sewer Board had failed to provide for this difference in levying the fee.

• **Fee charged**—The service charge is based on the amount of water used by a business or a person. Rates range from 45 cents per month to a maximum of 25% of the monthly water bill.

Money already collected, and that which will be collected, will be held in trust until the supreme court issues a decision. Refunds will be made if the high court decides against the city.

Fixing the fee on the basis of water use would be fair, the court stated, only if all persons paying were on exclusively assessed sewers or exclusively non-assessed sewers.

Water fluoridation gets approval by Philadelphia

Water fluoridation will get its largest convert when Philadelphia (population over 2,000,000)—starts adding fluorides to its water this summer. Purpose: To help prevent tooth decay in children.

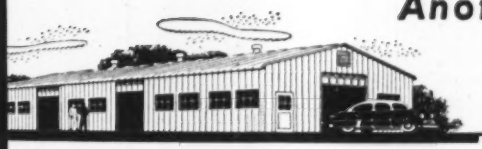
Largest city to practice fluoridation at present is Washington, D. C., with a population of 802,000.

• **Small Quantities**—Hydrofluosilicic acid will be added to the water in small proportions, said Gerald E. Arnold—in charge of Philadelphia's water operations. The city will ask for bids for the chemical this month. Necessary machinery will be installed in time to start operations some time in July or August.

Chemical cost for this year will be $105,000; machinery is expected to cost about $65,000.

Arnold said that users need have

(Continued on page 65)

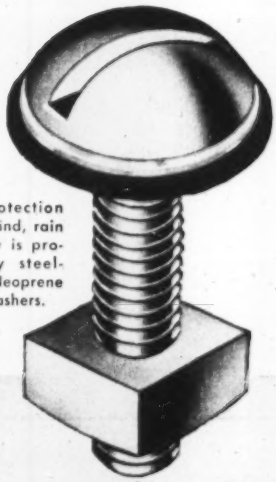


Another BUTLER *construction feature for better steel buildings*

BOLTED CONSTRUCTION

Locks sheets to rigid steel frame

Typhoons and earthquakes have proved the superior protection given to building contents by Butler construction! Galvanized bolts lock specially-corrugated Butler galvanized or aluminum sheets to rigid steel framework. Sheet laps are bolted together for extra rigidity and weather-tightness. Precision-punched and dimensioned bolt holes assure fast, easy, low-cost field erection—and also assure 100 percent re-use of materials for building expansion or removal to a new location.

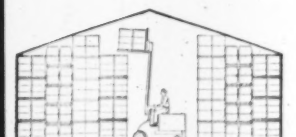


Extra protection against wind, rain and snow is provided by steel-backed Neoprene rubber washers.

Only BUTLER *gives you ALL these advantages:*

- Clear span, rigid frame construction
- Deep-drawn corrugated sheets, galvanized or aluminum
- Bolted construction
- Die-formed one-piece roof ridge
- Weather-sealed windows and base
- Die-formed curved eave sheets
- Sidewall sheets mitred for weathertight fit with eave sheets
- Weathertight stationary ventilators
- Easily insulated
- Complete adaptability to your door and window requirements

This combination rigid frame Butler building is used as an insulation processing plant. Butler single span rigid frame buildings are available in widths to 70 feet; combination or multiple units in practically any desired width; with heights and lengths to meet the widest range of requirements.



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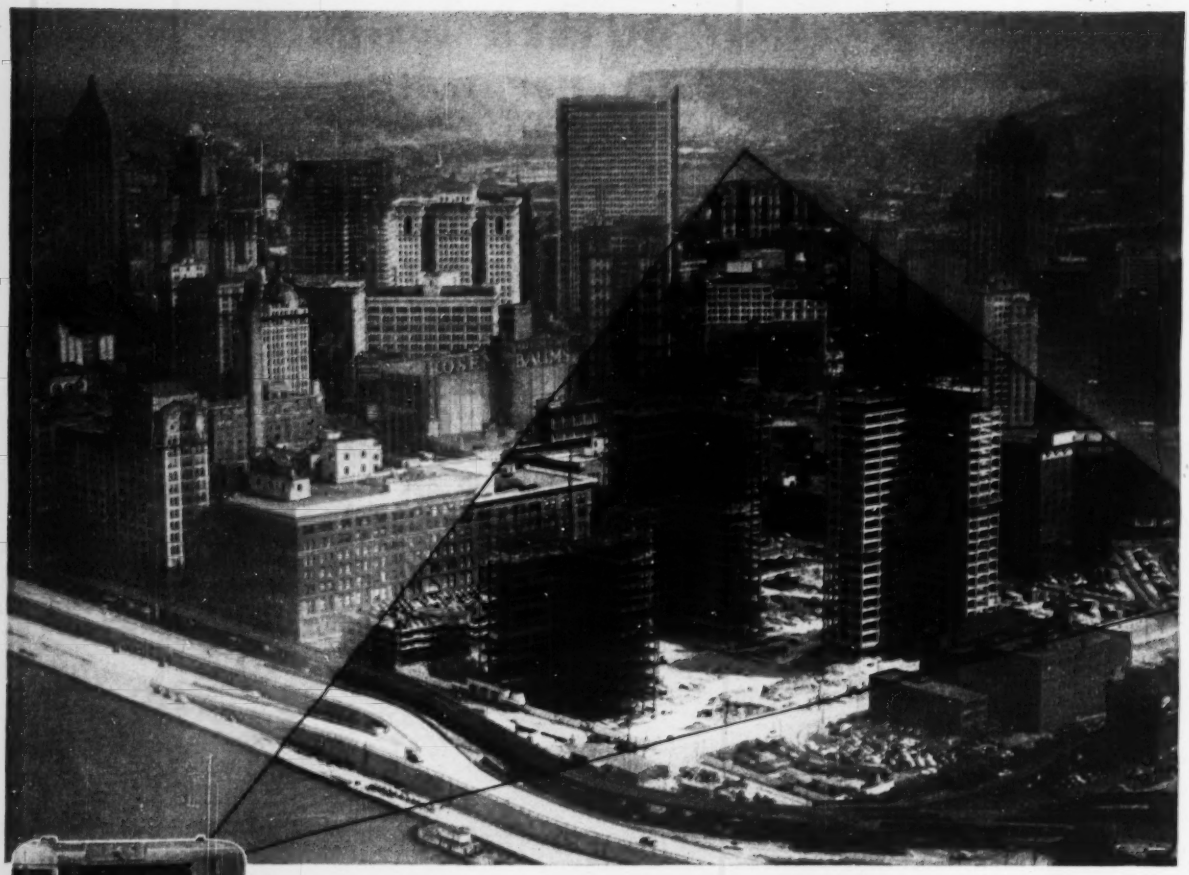

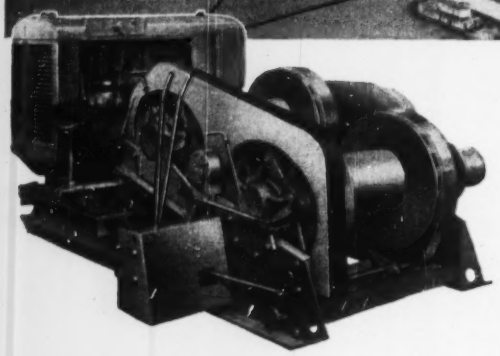

the record of performance on the golden triangle points to Clyde's value

On Pittsburgh's fabulous "Golden Triangle" project, Clyde Band Friction Hoists again prove their ability to spot loads swiftly, accurately, and safely. Where building schedules are tight, where material handling costs are paramount, contractors know they can depend on Clyde equipment.

Preference for Clyde hoists is based on these performance advantages: Smooth, positive clutch engagement and release . . . elimination of shock loads . . . split-second control for fast, accurate spotting . . . internal friction bands that dissipate heat faster, last longer, are quickly adjusted and that can be replaced without removing the drums . . . ball and roller bearings throughout results in greater operating economy and minimizes maintenance.

Investigate the complete line of Clyde Band Friction Hoists whether your need is a hoist for setting steel, hoisting concrete or high cycle material rehandling . . . there's a Clyde to do a better job. Available in one, two or three drum sizes with line pulls up to 21,000 lbs. and line speeds to 400 fpm. Write today for complete information.

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Subsidiary of Barium Steel Corp.

no fear about fluoride adding something to the taste (1 ppm of the acid will be added).

The city council has appropriated the funds for six months operation this year. Future annual costs will be about $200,000.

• **Collection troubles**—Fluoridation is the bright side of Philadelphia's water picture; on the other side, the water department is having trouble collecting its bills—$2.5 million worth.

Lack of these funds threatens to hold up the city's multi-million dollar waterworks improvement program.

Revenue Commissioner George S. Forde told the city council that existing laws—to help him collect delinquent accounts—are almost unenforceable.

"If the city shuts off water to all people owing water bills, this administration might as well leave town," he said. Forde added that the city is handicapped by existing health laws and the public's probable reaction to cutting off water in homes.

One possible solution: The city can sell properties at sheriff's sale when there are long overdue water taxes. Forde said this will be done with guilty commercial users.

Sewerage work affected by state actions

Action by three states—Indiana, Ohio and New York—affected sewer and sewage treatment plant construction in three cities—and in three different ways.

In Indiana, the state legislature enacted a bill which will help Indianapolis finance a $50-million sewer extension and treatment plant improvement program.

Chief provisions:

• Permit a "service charge" to be levied against all non-taxable properties—churches, colleges, private schools and the Federal Building and Statehouse—for use of the city's sewer system.

• Permit the city to make a similar charge to non-city residents who are furnished city sewerage service.

• Permit the city to charge industries extra for any special treatment of their sewage.

The multi-million dollar program is planned for a ten to 15-year period; it will modernize the city's sewerage system completely. At present the city has a $12-million improvement program under contract.

The new sewer charges are expected to yield $500,000 annually.

(Continued on page 66)

Briefs from the YEOMANS GUARD

Another Commandment for Pump Maintenance

See that piping puts no strain . . . absolutely none . . . on the pump casing.

When a pump is installed, all piping should be in place and entirely self-supporting. Making connections should require no stress or strain—otherwise the casing may be cracked or sprung enough to allow closely-fitted pump parts to rub.

Moral: Check piping supports regularly—to make sure that loosening, or settling of the building has not put strain on the casing.

This and other good maintenance rules are set forth in Manual 2000, a most useful manual.

☐ *Please send Manual 2000.*

Stars Still Scintillate in Chicago's Auditorium . . . in the basement

For the galaxy of VIP's who "slept here", and of world-famous voices that thrilled from its operatic stage, few buildings can match Chicago's Auditorium Hotel and Theatre—two buildings in one, erected in 1889.

Below-stairs are two more "stars" that still perform with flawless perfection, unseen and unsung; two Shone ® Pneumatic Ejectors, one in each building—installed in '89.

In 1946, when this honored edifice was thoroughly inspected preparatory to becoming Roosevelt College, the two Shones were found in excellent condition and well able to continue. They're still doing their stuff—quietly, rhythmically. Can you think of any mechanical device with a performance record approaching that of the Shone? We can't.

☐ *Send Shone Engineering Manual.*
☐ *Send list of Shone Installations.*

Centrifugals—Pneumatic Ejectors—YEOMANS BUILDS A FULL LINE

Yeomans manufactures a full line of centrifugal pumps and pneumatic ejectors.

In each instance, Yeomans engineering attention focuses *on the character of job to be done*—

• to determine which type of pumping equipment will perform most efficiently, dependably, and at lowest cost.

This claim is, to be sure, common to practically all manufacturers; but here it has an added significance, because a Yeomans recommendation is wholly unbiased as to type of equipment.

In another respect, every Yeomans recommendation is emphatically biased—we have an uncompromising conviction that Yeomans Pumps, centrifugals, and pneumatics, are best built.

Moral: If you have a knotty problem of pumping material, talk to Yeomans.

The Yeomans Guard, published several times a year, is a compendium of news and useful information covering the pumping of materials and the treatment of wastes, both domestic and industrial. We shall be pleased to send you the current issue if you'd care to have it. Ask your local Yeomans Representative—listed in the telephone book yellow pages under "Pumps"—or write direct.

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1999-1 N. RUBY STREET, MELROSE PARK, ILLINOIS

Manufacturers of: Centrifugal Pumps and Pneumatic Ejectors for Buildings, Municipalities, and Industrial Applications, and a Full Line of Waste Treatment Equipment.

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Double-Acting
PILE EXTRACTORS

•The most effective and practical equipment for economical extraction of piles

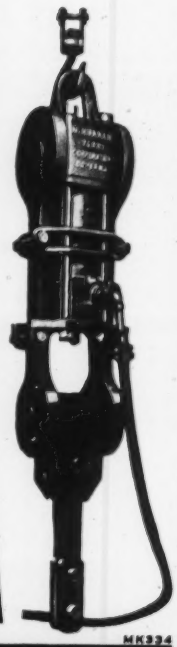
•Embody the same mechanical principles that have made McKiernan-Terry Double-Acting Pile Hammers preferred by engineers and contractors for more than half a century

•Provide high frequency and energy of sharp uncushioned blows that vibrate and loosen the most stubbornly set piling

•Built in 2 sizes to withstand crane pulls up to 50 tons and 100 tons, respectively, and for both the average and difficult pile extracting jobs

•Reported by users to successfully extract piling that could not be removed with other and much larger types of pile extractors

Write for complete McKiernan-Terry Catalog.



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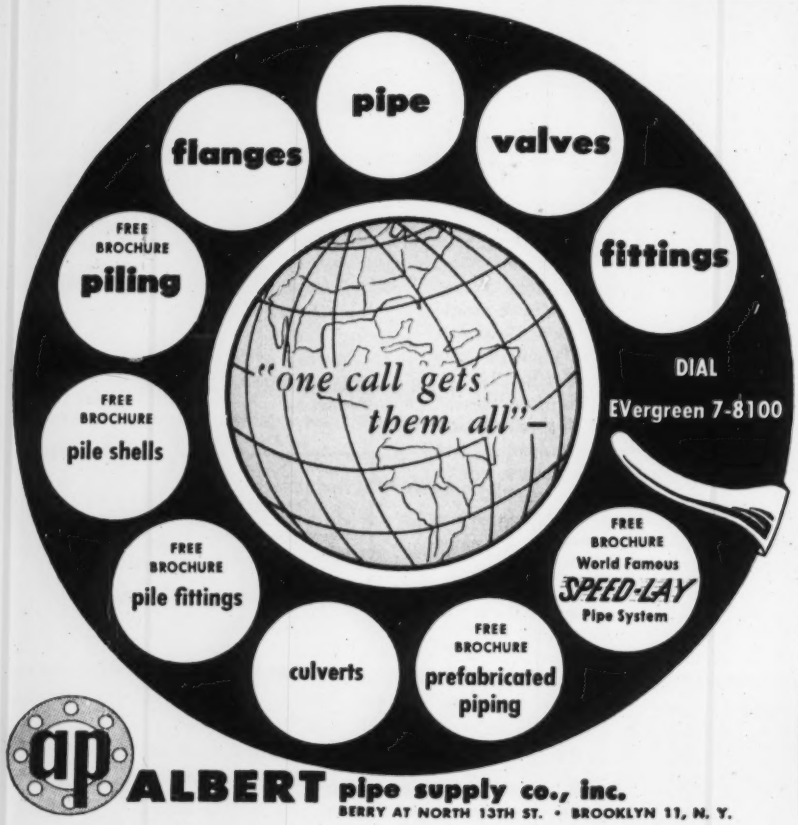

ap ALBERT pipe supply co., inc.
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• **State deadline**—In Ohio the situation is a little different.

Youngstown has been given until June 12 to stop dumping raw sewage in the Mahoning River—but the city council and mayor have been at odds for the last 14 months over necessary legislation.

Mayor Charles Henderson wants authority to hire engineers to prepare detailed plans for the required multimillion dollar treatment plant; the council wants to know the administration's choice of engineers before making any commitments. And June 12 isn't far away.

• **State help**—New York State is going to give the city of Batavia $11,000 to help pay for plans to enlarge and modernize the existing treatment plant.

Present population of 18,000—the existing plant was designed to handle 10,000—makes the work necessary. Result will be the abatement of pollution in Tonawanda Creek.

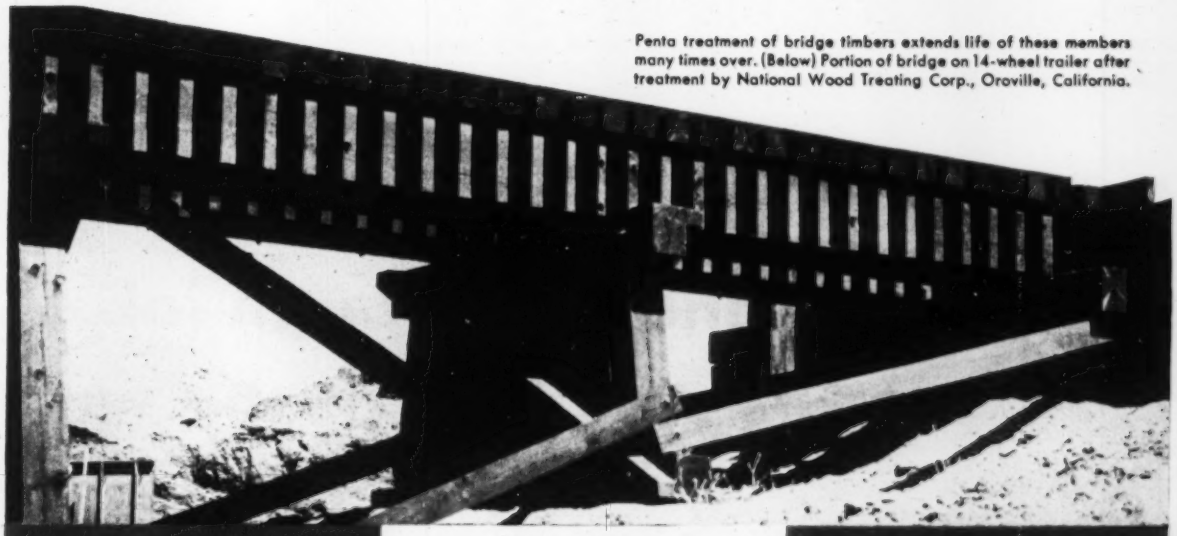
Municipal briefs . . .

• **Big holdup**—Residents of Cuyahoga Heights, Ohio—all 765 of them—are holding up construction of a $4-million Air Force forging plant. They object to the tax-free status of the project and want $20,000 yearly to make up loss of revenue. So far all requests for some form of payment have been refused.

• **Steel yes, construction no**—Steel is on the job for the Akron, Ohio, Expressway bridge but nobody seems to know when the contractor will start erection. Original completion date was November, 1951, but the job has been plagued by various delays, including one caused by lack of steel. Now the contractor claims that a part needed to repair their erecting crane has been lost and nothing can be done until it is located.

• **Demolition starts**—Demolition work started recently on the approach area for the new third tube of New York's Lincoln Tunnel. Ninety buildings are scheduled to go before the work is completed. The $90-million tube project is expected to be completed in 1957.

• **Housing surplus**—In Warren, Ohio, low-cost housing units are going begging while many families are looking for apartments. Fly in the ointment is a $2,000-maximum income for a couple to be eligible for low-rent housing.



Penta treatment of bridge timbers extends life of these members many times over. (Below) Portion of bridge on 14-wheel trailer after treatment by National Wood Treating Corp., Oroville, California.

MONSANTO PENTA adds years to life of RAILROAD BRIDGES

U.S. Air Force photos

At Beale Air Force Base in California, two special prefabricated trestle bridges support critical troop and equipment trains. By pressure-treating the timbers with Monsanto Penta before construction, the contractor multiplied the life of the bridges—and in the process saved taxpayers a considerable sum. Treatment specified was 8# net retention per cubic foot of wood with a 5% Penta-in-oil solution.

Monsanto Penta assures contractors of *permanence*. Penta pressure-treated wood has the preservative forced deeply into its cells. It won't decay . . . insects won't eat it. It is clean, safe, and easy to handle.

Penta will not wash away with rain or ground water. It costs little and protects your work for years. Put Penta in your specs for all exposed wood construction.

Write us for informative booklet "Specify Monsanto Penta." MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 800 North Twelfth Blvd., St. Louis 1, Missouri.

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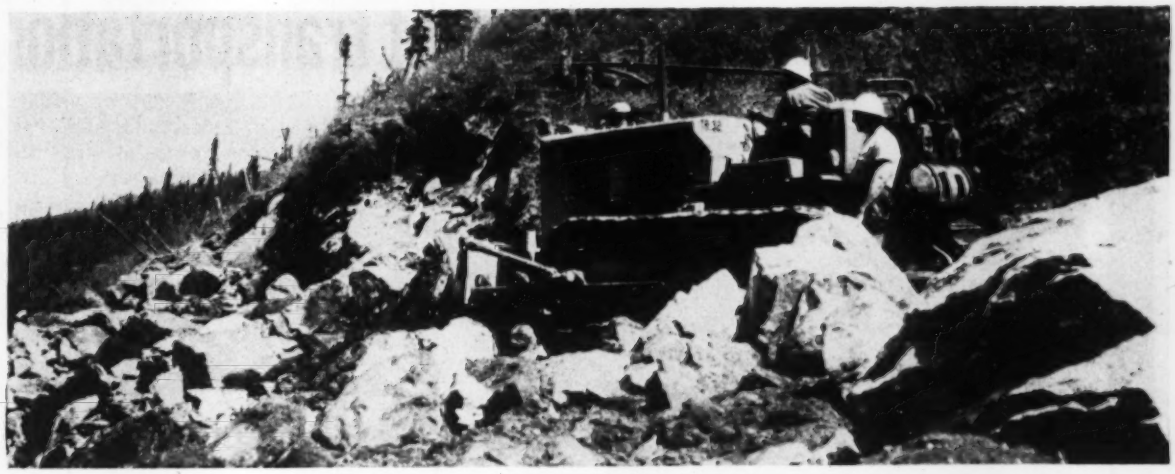
360 MILES TO UNGAVA IRON

and it's a tough job every inch of the way

Two Gardner-Denver compressors, powered by Cat D8800 Engines, furnish air for drilling blast holes.



A D8 with No. 8A 'Dozer pioneers a path for drill crews and compressors. This is typical terrain.

One of the most spectacular engineering jobs of this century is the construction of a railroad from Seven Islands, Quebec, on the St. Lawrence, to Knob Lake, 850 miles from the Arctic Circle. It is being built for the Iron Ore Company of Canada, to tap the rich iron deposits of the Ungava region.

Early last year a section boss, working on the right of way that runs northward to Labrador, made a historic remark. Quoted in a national magazine, he said, "Without the Cat* and the airplane that ore would sure stay up there a mighty long time."

This P & H 1½-yd. shovel, excavating on the right of way, is powered by a Caterpillar D13000 Engine.

It was the airplane that flew in the men and the first small tractors and bulldozers. They in turn built the landing fields for bigger planes to bring in bigger earthmovers. Since then the battle has gone forward, foot by rugged foot, through the wilderness.

Today, at a rough estimate, more than 250 miles of right of way have been cleared and 190 miles rough-graded. Something over 110 miles of track have been laid and are in use.

Handling the job are four big contracting firms which have pooled their resources under the name of C.M.M.K. The initials stand for Cartier Construction Co., McNamara Construction Co., Mannix Ltd. and Morrison-Knudsen of Canada. An immense quantity of equipment has been assembled by the combined companies. It includes track-type tractors and bulldozers, wheel tractors and scrapers, wagons, motor graders, shovels, cranes, compressors, engines and electric sets. About 195 Caterpillar* units are in use – roughly two-thirds of the total machines on the job.

The route traverses extremely rough terrain, with mountains, dense forests and 1,000-foot canyons to be crossed. Much of it has to be blasted out of solid rock, and in the whole 360 miles there isn't a yard that isn't tough.

In the bitter months of midwinter much of the equipment is laid up in the

At this point the grade is nearly ready for rail. A Cat No. 12 Motor Grader is shown spreading and leveling fill.

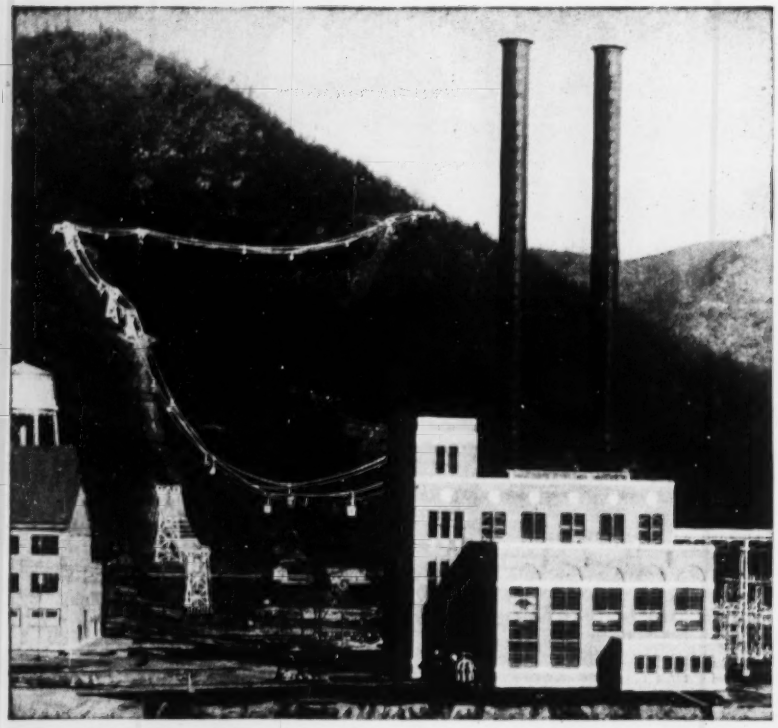
scores of camps that have been built along the route. During this period operations and maintenance men have an opportunity to overhaul the machines in preparation for open weather. Caterpillar Dealers have sent some of their best service men and special tools to the base camps to help with the work.

The cost of the railroad project has been estimated at $200,000,000, and it may easily run higher. Started in the fall of 1950, it is expected that the job will be completed and the first ore hauled out in 1954. Meanwhile the mines are being developed, and within two or three years this area should be furnishing the raw material for a big share of America's steel.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

*Both Cat and Caterpillar are registered trademarks – ®

Aerial tramways give low-cost transportation

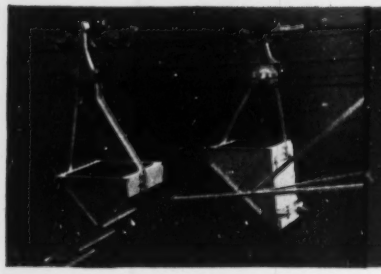


This 8,775 foot bicable tramway has been in continual operation for 23 years, transporting large quantities of coal at low ton-mile cost and giving dependable all-weather service.

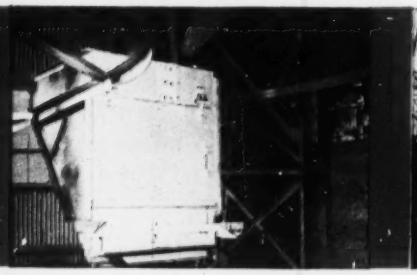
The tramway has two stationary track cables and a traction rope that moves continuously in one direction. Buckets clamp to the moving rope at 205 foot intervals and move at 500 feet per minute.

The 48 cu. ft. end dump buckets load and unload automatically. For loading, buckets detach from traction rope, run on graded rails, and attach again after being loaded. Detaching and attaching are also automatic.

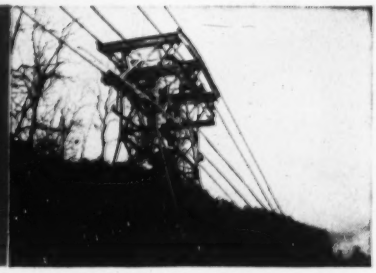
This aerial tramway was designed and installed by the Tramway Division of U. S. Steel at the Alloy, West Virginia, plant of Electro Metallurgical Company, a Division of Union Carbide and Carbon Corporation.



Conveying materials for a few hundred feet or for several miles, Columbia-Geneva Tramways can be built to handle from 1½ to more than 300 tons hourly. They can be designed to meet almost every type of operating condition, and to handle many kinds of commodities easily and economically—from a tray of optical lenses to a carload of lumber.



Load carriers, like this one on a bicable tramway, are available in many different types and sizes. Services of Columbia-Geneva's Tramway Division include designing the tramway...supplying the steel...excavating for foundations and erecting support structures...furnishing and installing all wire rope, cables, and electrical and mechanical parts.



Tramway support structures are of many types, depending on terrain and job. Because of this flexibility, tramways are free of ground contour, roads, railroads, etc., are unhampered by bad weather, and can climb extremely steep grades. Other advantages: loads can be moved without rehandling and rights-of-way are easier to acquire.

Send for this free manual on aerial tramways. Write on your letterhead today to the Tramway Division, Columbia-Geneva Steel, 141 Battery St., San Francisco 6, Calif. Or for an expert study of your transportation needs, ask for the services of a Tramway Engineer. He can show how an aerial tramway would pay off for you, and he can contract for its design and all phases of its construction, including materials.

Tramway Division

Columbia-Geneva Steel

Division United States Steel Corporation

UNITED STATES STEEL

NEW CHIEF of Engineers, Gen. Samuel Sturgis, (right) gets congratulations from Chief of Staff J. Lawton Collins, as his new appointment is announced at the Pentagon.

Tough problems await General Sturgis, the Army's new Chief of Engineers

His experience in both the military and civil works aspects of his new post will be tested

When Maj. Gen. Samuel D. Sturgis was sworn in as Chief of Engineers last month, General J. Lawton Collins, the Army's Chief of Staff, lauded his outstanding record in both the military and civil works aspects of an Army Engineer's job. This dual record, observers say, will stand General Sturgis in good stead. There are pressing problems in both fields awaiting solution.

On the military side, the relationship of the Corps of Engineers with the rest of the Army is not entirely satisfactory. Some high Army officers believe that the Corps, because of its civil works duties, is not enough under their direct control. On its part, the Corps could properly be concerned with the large number of non-engineer officers who are being put into engineer and logistics commands.

And in the civil works field there is the over-riding question of some sort of a combination with the Bureau of Reclamation, which a special presidential committee is studying and about which congressional committees are on the verge of feuding.

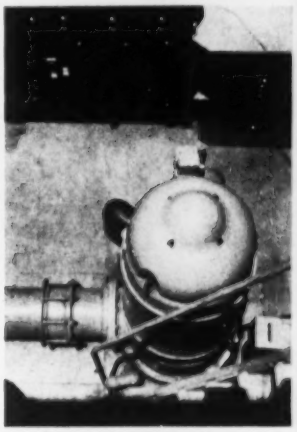
• **Engineer officers**—In addition to these problems, there is the very important one of building up the Corps' strength with capable engineer officers. Many non-technical men were forced on the Corps of Engineers during the war, became reserve officers, and are now on the Corps' roster.

Whereas before the war some 80% of Corps of Engineer officers, regular and reserve, were engineering graduates, it is now estimated that this ratio is less than 20%. To make matters worse, too many young engineers who are drafted avoid officer candidate school in order to finish up their military service more quickly and get back to civilian jobs.

There is a general belief that Sturgis regards personnel as his No. 1 problem and so will tackle all of these sore points quickly and as vigorously as his well-founded knowledge of military diplomacy shows him would be effective.

• **Army bred**—That General Sturgis has an unusual background and training for the job of Chief of Engineers

Critical Jobs are routine for Johnston!



Take this Municipal Pumping Station, for example . . .

Over 40 years ago, the Sunnyslope Water Company of Pasadena, California installed their first Johnston Vertical Turbine Pump. Since then Sunnyslope has used Johnston equipment exclusively. There must be reasons for this kind of product acceptance. Here are a few . . .

Vertical design saves as much as 60% floor space, to say nothing of head room • Johnston Pumps need no priming—so can be installed to start and stop automatically, without expensive priming devices • Johnston Pumps are tough . . . They require practically no maintenance . . . and they'll handle jobs other pumps can't touch • Johnston Pumps are the cheapest pumps you can buy per year of service. Case histories prove it!

This is another example of the ability of Johnston equipment to handle all types of pumping jobs. Why not let our engineers consult with you on *your* special problem.

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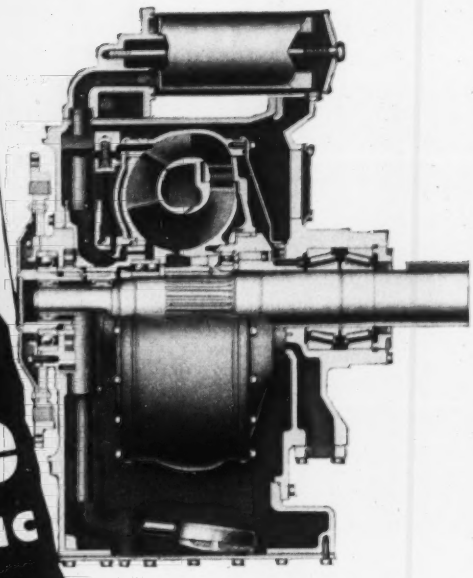
Two-Stage HYDRAULIC TORQUE CONVERTER



Filling the gap in industrial hydraulic drives, Twin Disc offers the first of a new series of Two-Stage Hydraulic Torque Converters — providing maximum operational efficiency, up-to-4:1 *torque multiplication at stall* combined with *progressively* increasing engine speed during acceleration or *uniform* pull-down under load. This new series features complete unloading of the engine at high-speed, no-load conditions, providing economy and minimum cooling requirements.

This new concept in Two-Stage Converters—developed in close cooperation with leading engine and equipment manufacturers — is backed by the same engineering and service reputation that has already made Twin Disc the acknowledged world leader in the development of Industrial Three-Stage Hydraulic Torque Converters.

If you are using powered equipment needing a Torque Converter Drive — and for which the modified performance characteristics indicated are desirable—write for specific information on the new Two-Stage Torque Converter Series. Address all inquiries to Twin Disc Hydraulic Division, Rockford, Illinois.

Typical Twin Disc Two-Stage Hydraulic Torque Converter, Model SD (shown above), with Spider Drive and Disconnecting feature.

Built for a Long Life . . .
Backed for a Lifetime

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CLUTCHES AND HYDRAULIC DRIVES

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is evident from his record. In the first place he is a career military man in heritage as well as in practice. Both his father and grandfather were major generals, both West Point graduates. An uncle, a lieutenant, was killed with Custer in the Battle of the Little Big Horn in 1876.

Sturgis, himself, graduated from West Point in 1918, saw duty on the Mexican border and in France and then taught mathematics at West Point for four years. Later he commanded the 14th Engineers in the Philippines, where he engaged in strategical studies of the islands and the building of defenses on Bataan, and followed this with service at Ft. Riley with the 9th Engineers which pioneered the development and use of heavy engineer equipment.

• **Passamaquoddy**—Not until 1935, after he had been graduated from the Command and General Staff School, did Sturgis get into the civil works activities of the Corps of Engineers. His first job was on the Passamaquoddy tidal power project in Maine, followed by service in the Huntington, W. Va., district after the 1937 Ohio River flood.

In 1940 he became district engineer at Vicksburg where he spent 2½ years on Mississippi River flood control, and the great program of cantonment, airbase and ordnance plant construction that was under way in the area at that time.

• **War**—General Sturgis' war service was of three years' duration as chief engineer of the Sixth Army in the Pacific, which followed each of its 22 amphibious landings with extensive port and airbase construction. He participated in the New Guinea, New Britain and Admiralty campaigns, and in the invasion of Leyte and the conquest of Luzon, where his early knowledge of the Philippines proved exceptionally valuable.

From 1946 to 1948, Sturgis was air engineer for the Air Force in Washington, and then returned to civil works duty as division engineer of the Missouri River Division at Omaha. Three years on this largest of Army Engineer construction operations was followed by a year in command of the Sixth Armored Division at Ft. Leonard Wood in Missouri.

Sturgis then went to Europe as commanding general of the Communications Zone development across France from the Atlantic to the Rhine. It was from this post that he was recalled for appointment as Chief of Engineers.

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Ford *Economy* Trucks for '53 are completely new from the tires up! New cabs, new chassis, new power, new transmissions . . . every inch specifically designed to provide fast, economical transportation. New Ford Truck timesaving *features* GET JOBS DONE FAST . . . at still *lower* cost per mile!

NEW "DRIVERIZED" CABS

cut driver fatigue!

New one-piece curved windshield, 55% bigger! Wider seat, with new *shock absorber*. Larger door opening, push-button handles.

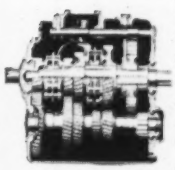
NEW LOW-FRICTION POWER!

Choice of 5 engines . . . V-8 or Six!

Overhead valve, 101-h.p. *Cost Clipper* Six, 145- and 155-h.p. *Cargo King* V-8's—cut down on friction *power waste*, save gasoline. Also, 106-h.p. Truck V-8 and 112-h.p. Big Six.

NEW TRANSMISSIONS . . .

widest choice in truck history!



Synchro-Silent transmission on all models at *no extra cost*. *Steering post shift* on 3-speed transmissions. *New Fordomatic Drive* or Overdrive now available on all ½-tonners at extra cost.

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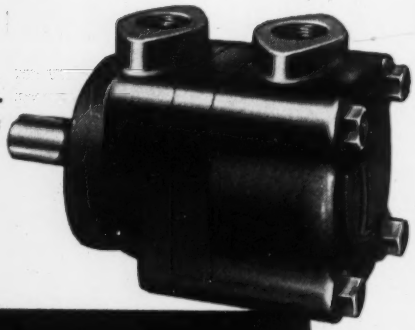
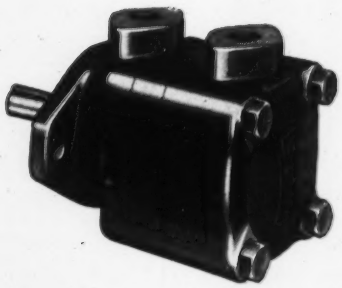
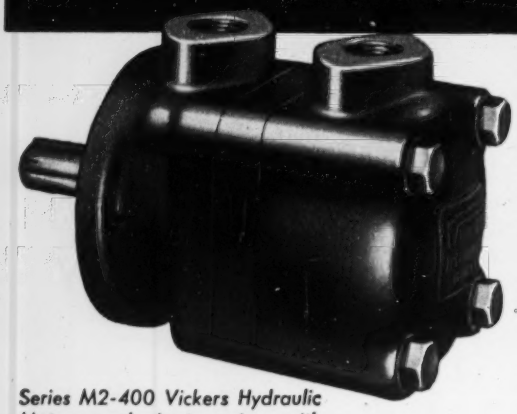


Series M2-300 Vickers Hydraulic Motors made in three sizes with 3 styles of mountings.



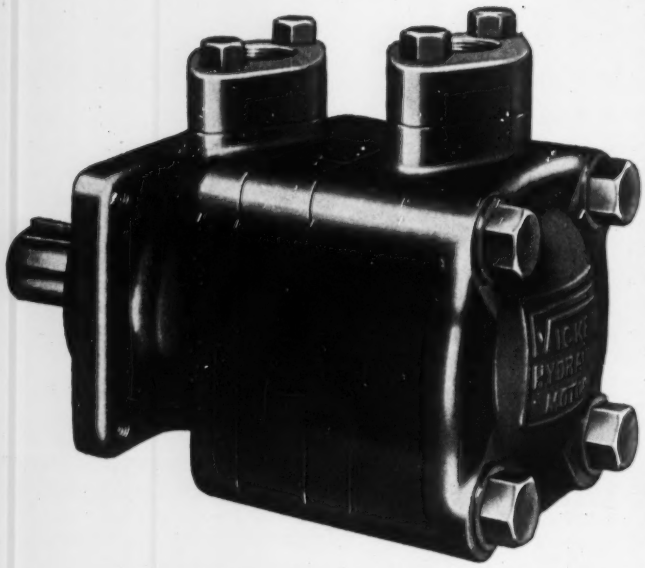
Series M2-200 Vickers Hydraulic Motors made in two sizes with 2 styles of mountings.

NOW AVAILABLE—



Series M2-400 Vickers Hydraulic Motors made in two sizes with 3 styles of mountings.

MORE SIZES of VICKERS BALANCED VANE TYPE HYDRAULIC MOTORS



Series M2-500 Vickers Hydraulic Motors made in two sizes with 2 styles of mountings.

Now in production are two more series of Vickers Balanced Vane Type Hydraulic Motors. They are now available in nine sizes and have normal horsepower ratings to 28.5 hp. Among the important features of these simple and rugged hydraulic motors are: (1) more horsepower for less money, (2) hydraulic balance for longer life and less maintenance, (3) automatic wear compensation, (4) dynamic balance and quiet operation, (5) exclusive "rocking beam" construction. Get in touch with your nearest Vickers Application Engineering office for further information; ask for new Bulletin M-5103.

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Write for NEW Bulletin M-5103

6219

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

Raymond Concrete Pile Co., New York, has just named George F. Ferris (picture) as president of the company to succeed William V. McMenimen, who becomes vice-chairman of the board. Maxwell M. Upson continues as board chairman. The new president has been general manager of the company since 1946.

Careers . . .

• **Appointed**–**Daniel J. Langan** has been named director of the Division of Finance and Accounts of the New York State Thruway Authority, effective May 1. Pay: $12,500 . . . **John J. Fitzgerald, Jr.**, has been named deputy chief of the Port of New York Authority . . . **Courtney D. Ward**, former general secretary of AFL Painters District Council No. 6, will fill the newly-created post of executive secretary of the Cleveland chapter of the Painting Decorating Contractors Assn. . . . **Raymond L. Walsh** has been promoted to chief engineer of Universal Atlas Cement Co., New York, subsidiary of U. S. Steel . . . **Richard G. Folsom** has been named director of the Engineering Research Institute at the University of Michigan.

• **Elected**–The newly-organized Ohio Concrete Block Assn., Inc., has elected as its president **R. E. Francis**, president of Reading Concrete Products, Inc., of Cincinnati.

• **Honored**–The U. S. Department of Labor has presented its Distinguished Service Award to **Maurice M. Hanson**, chief of field operations for the Bureau of Apprenticeship, for his work in promoting apprentice training programs in the construction industry.

How long do you have to wait for prints?

If you wait more than a few minutes–or pay more than 2 cents a square foot for them–it's high time you took a close look at the *low-cost* Bruning COPYFLEX "20" whiteprinter. This efficient, medium-volume copying machine takes cut or roll paper stock, quickly turns out ready-to-use prints up to 42″ wide–at an average cost of only 2 cents per square foot. It doesn't take fancy figuring to calculate the savings in time and money you'll realize when a Bruning COPYFLEX "20" copies your engineering drawings and office forms.

Here's a fast run-down of the cost-cutting features that are making the new COPYFLEX "20" so popular with budget-minded engineers, designers and architects.

LOWEST-PRICED copying machine in its class
TWO CENTS A SQUARE FOOT average operating cost
SPEEDS DELIVERY of dry, ready-to-use prints
NO FUMES to be exhausted . . . no expensive plumbing or ventilation systems required
OPERATES ANYWHERE – simply connect to a standard 115-volt a-c power line
NO TRAINING NEEDED to operate; only a 5 minute explanation

These are only a few of the facts and figures on hand to prove that the *low-cost* Bruning COPYFLEX "20" can give you better prints . . . faster . . . for less money. Just mail the coupon below–for details on the COPYFLEX "20". No obligation, of course. B.3.2

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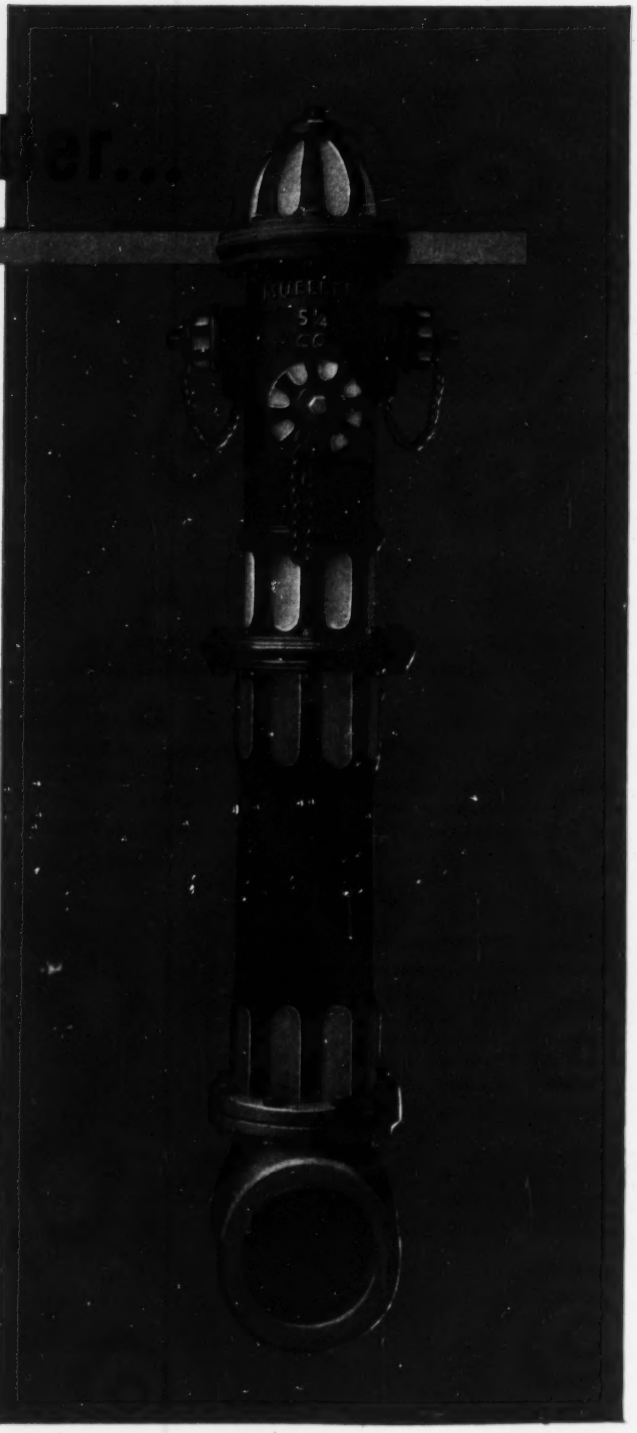

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CHATTANOOGA, TENNESSEE

30 MILES OF GRADING remain to be done on the $6-million Isthmus of Tehuantepec highway, and the black topping is expected to be completed this year. At this point the new road starts inland to mountains and jungle, from junction with the Pan-American Highway.

Mexico's trans-isthmian highway nearing completion

Mexico will have the quickest and best land crossing of the continent north of the Panama Canal when a four-lane, coast-to-coast highway through desert, mountains and jungle from Tehuantepec on the Pacific coast to Coatzacoalcos on the Gulf of Mexico side is completed.

The location is a logical one. Starting from the Pacific coast port of Salina Cruz, the road joins the Pan-American Highway some 12 miles inland and travels south on it several miles before cutting inland again at Juchitan fork. The trans-isthmian railroad, built by the British at the beginning of the century and showing its age, is over-passed several times on the way to the Gulf. The same route is followed by a government-built coast-to-coast petroleum pipeline that was completed last year and at the present time is in service.

Crews started work from both ends of the highway, and only grading on a 30-mile middle section remains to be done. The road is built to carry expected heavy intercoastal traffic. Great care was taken with culverts and drains because of the heavy tropical rains in the area.

Mexican highway authorities plan to use the new road as a basis for a network linking up hitherto isolated towns in southern areas. It also will provide a starting point for a new road to the Yucatan peninsula—isolated, except by sea, until last year when a rail line 25 years in the making finally was pushed through to Campeche. The road to Yucatan would start at Coatzacoalcos, and would reach Campeche at a cost of $6 million.

INTER-COASTAL HIGHWAY will cut trans-isthmian travel time to three hours.

Milan skyscraper

Europe's tallest job in reinforced concrete

Said to be the loftiest building of its kind in Europe, a 25-story reinforced concrete skyscraper is under construction in Milan, Italy. When finished the 325-ft high $3.5-million, building will have air-conditioning, radiant heating, and, on its rear terrace, swimming pools.

In prewar days there was only one skyscraper in Milan—a project built in 1935 with a series of 16-story towers in the business center. This structure aroused such a controversy between traditionalists and modernists that city officials refused permission for any further buildings that high. But the wreckage done by the war radically changed the historical aspect of Milan, so that very few objections were raised to proposed construction of multi-storied buildings in space that is now available in the business center.

Prestressed bridge uses precast elements

Precast boxes, provided with holes in their ends to take prestressing cables, form the soffit of this 40-ft skewed span in North Devon, England. In the bottom of the trough the two unsheathed outer cables were prestressed before the concrete was placed, and the middle, plastic-sheathed cable, like the transverse cable that had to be placed above the precast boxes, was post-tensioned three days after concrete was poured. Completed deck cost $4.90 per sq ft.

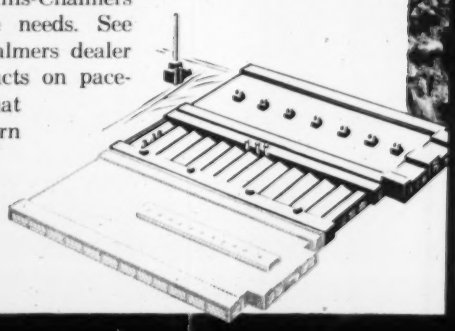
There's more to tractors than meets the eye . . .

The real "pay-off" value of any tractor to its owner is how it measures up to the standards set by today's modern production methods.

To meet these needs, Allis-Chalmers started from scratch and built *a line of tractors with a future.* Thousands now have been tested and proved on the toughest proving ground of them all, actual jobs, and they have more than measured up to expectations. Owners have found that these tractors set new standards of performance . . . that they give greater output with less down time . . . plus more profit, whether pulling, pushing, digging or dozing. Operators have discovered new ease and comfort in operation, too; and mechanics say these are the easiest-to-service tractors that they have ever worked on.

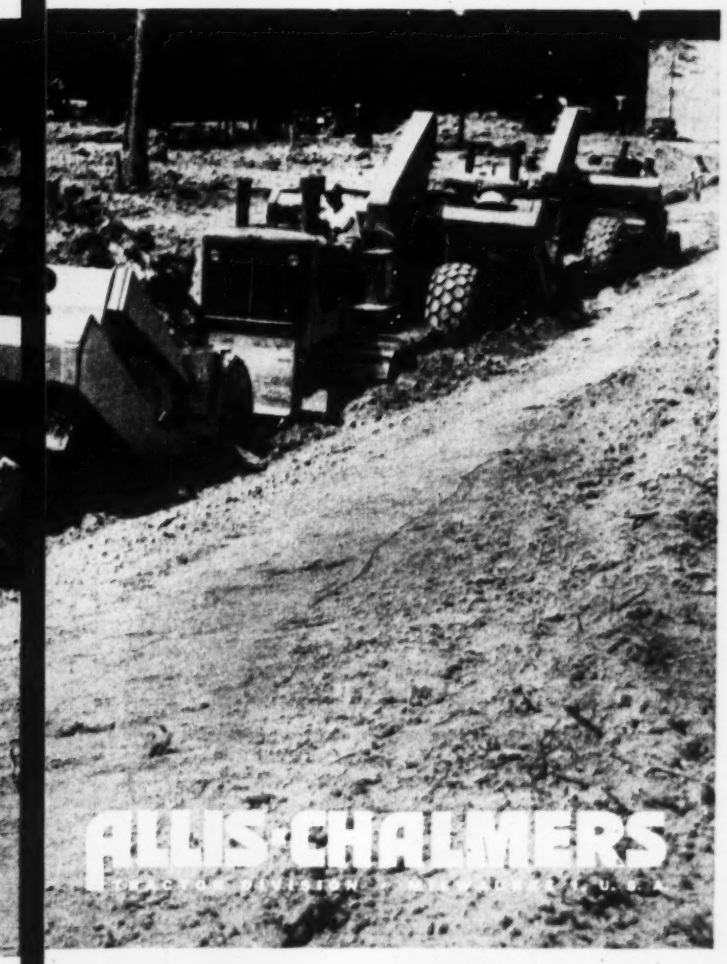
Yes, the "family circle" of users of Allis-Chalmers tractors is growing constantly. Many users who bought their first Allis-Chalmers tractor only a few years ago now have fleets of them, and many others who operate only one or two tractors have become Allis-Chalmers boosters.

This acceptance is the springboard behind a big plant expansion at Springfield, Illinois, which will enable Allis-Chalmers to meet *your* future needs. See your nearby Allis-Chalmers dealer now for the inside facts on pace-setting tractors that measure up to modern production methods.



From haul road to highway to heavy construction . . . wherever big production is essential to the job, this big HD-15 has more than proved its worth. With 109 drawbar hp. and 27,850 lb. weight, it works quickly, efficiently as a dozer, tractor-shovel, puller or pusher.

This 72 drawbar hp., 18,800-lb. HD-9 is making friends in every field because its power and weight make it ideal for dozens of today's jobs. And, operators can gain up to 25 percent more production on short dozing jobs because they can go from any forward to any reverse speed with just one shift.



The 40 drawbar hp., 11,250-lb. HD-5 is a versatile jack-of-all-trades for fleet owners as well as one-man operations . . . with hydraulically controlled Tracto-Shovel, it's equally useful loading bulk materials, dozing, digging basements, dozens of other jobs.

Here's real tractor teamwork . . . four HD-20's in a "train" — three pulling scrapers, one pushing — all working together for big production. With torque converter drive, they synchronize speeds at contact . . . automatically load at the fastest speed that job conditions permit, with less strain on operators and equipment. With 175 engine hp. and 41,000 lb. weight, the HD-20 is today's new yardstick of crawler tractor performance.

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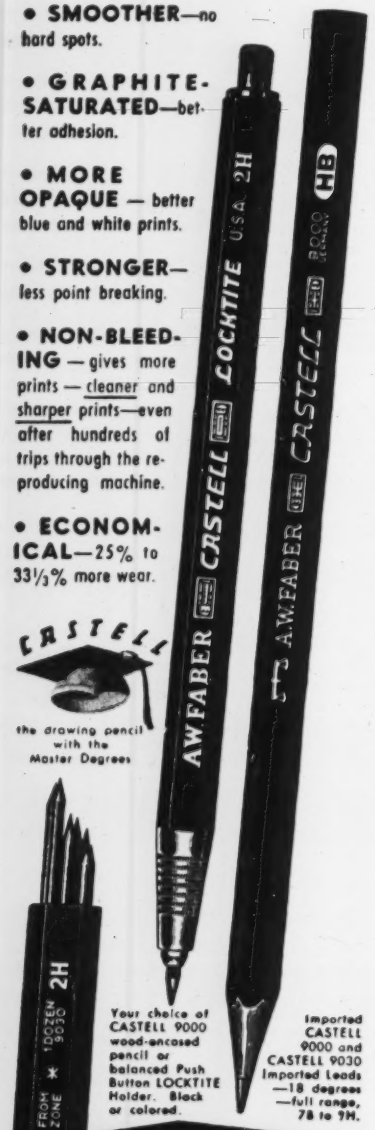
• **GRAPHITE-SATURATED**—better adhesion.

• **MORE OPAQUE** — better blue and white prints.

• **STRONGER**—less point breaking.

• **NON-BLEEDING** — gives more prints — cleaner and sharper prints—even after hundreds of trips through the reproducing machine.

• **ECONOMICAL**—25% to 33⅓% more wear.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Oil company sanitation engineers change Arabia's age-old conditions

Arabia's oil, by attracting American and British enterprises, has given impetus to a new sanitary outlook for that sparsely populated and water-short country. In maintaining their customary sanitation standards for company communities of native workers, engineers have found that the success of their water supply and sewage disposal program is dependent on changing Arabian health and customs by an educational project leaning heavily on movies.

A. John Horn, sanitary engineer for the Arabian American Oil Co. in Saudi Arabia, points out that his company had to scrape bottom to find several thousand sufficiently healthy workmen out of the country's entire population of some four millions. Most Arabs, he said, had to be turned down because of diseases directly attributable to filth. The most elementary means of sanitation have been almost unknown in Saudi Arabia, with the result that plagues sweep the country disastrously and minor diseases of the intestinal tract incapacitate large sections of the population.

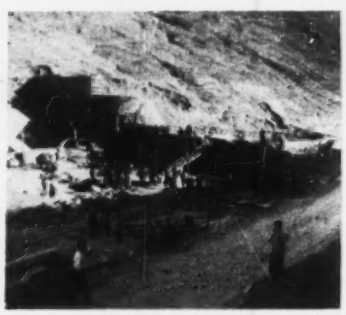
• **Water supply**—First step in the overall sanitation problem had to do with new sources of water supply and a correcting of primitive means of distribution, such as selling water, from indeterminate sources, out of filthy goat-skin bags.

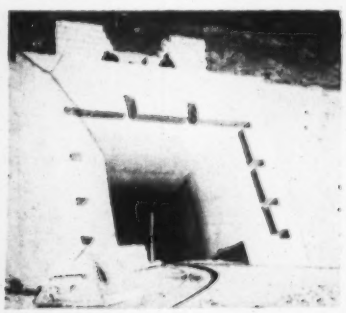
Water supply of most of the oil company areas is derived exclusively from underground sources, all of which are heavily mineralized in varying degrees. The underground strata greatly influence the mineral content of the water, and the replenishment of a water table appears to be exclusively from rainwater that usually falls only at higher elevations and must slowly percolate down through influent strata to the water table of the plains. All the water from these sources which is to be used for drinking and cooking purposes must then be distilled.

Distillation of sea water is being used more and more however. The Kuwait Oil Company has built a 600,000 gallon-per-day sea water distillation plant, using partial vacuum units, on the Persian Gulf, and only last week oil-rich Sheikh Abdulla al-Salem al-Sabah of Kuwait inaugurated the world's largest distillation plant, the first unit of which produces a million gallons per day and when completed will distill more than 5 mgd.

• **Sewage**—At present, Imhoff tanks are used for sewage treatment, but ordinary grit chamber design is inadequate because the Arabs use a great quantity of sand in their ablutions. The sand particles are lighter and

(*Continued on page 83*)





Iranian dam is Point 4 demonstration

This rubble masonry dam, 35 ft high and 225 ft across, will raise water from the Kuhrang River (which flows only four months of the year) to a 1¾-mile, 10 ft diameter tunnel through Karkonan Mountain 100 miles west of Istahon. A bulkhead gate will regulate inflow from the reservoir at the tunnel mouth. A demonstration job aided by U. S. Point 4 to illustrate proper use of water resources, the long range plan calls for a hydroelectric plant in the future at the tunnel outlet where the water will drop 230 ft to the Zayandah Valley to irrigate 25,000 acres of new land.

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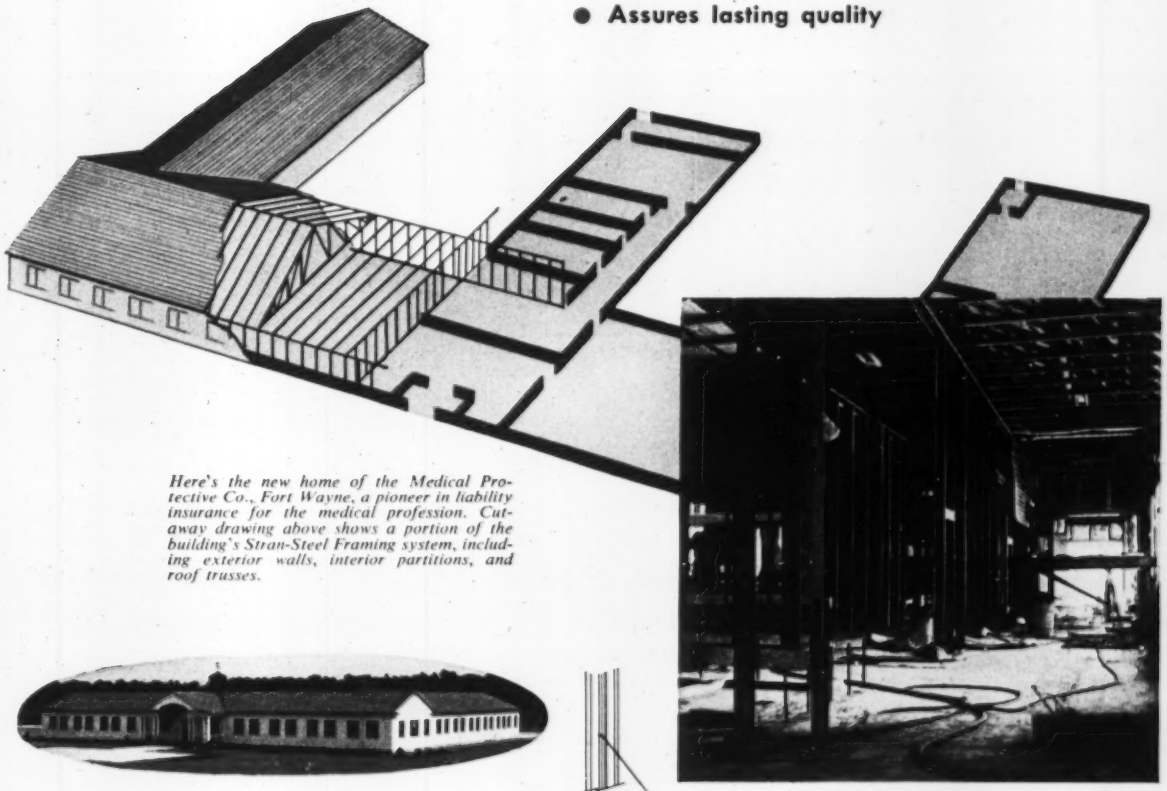
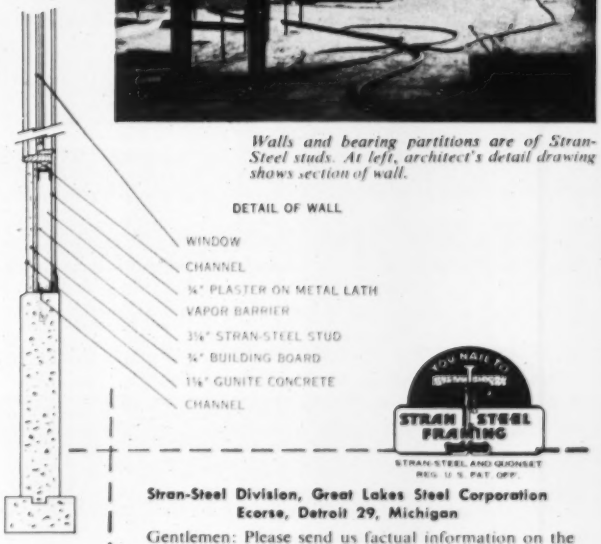


Here's the new home of the Medical Protective Co., Fort Wayne, a pioneer in liability insurance for the medical profession. Cutaway drawing above shows a portion of the building's Stran-Steel Framing system, including exterior walls, interior partitions, and roof trusses.

Walls and bearing partitions are of Stran-Steel studs. At left, architect's detail drawing shows section of wall.



The new Medical Protective Company's building was completed and in use in less than 10 months. "The time saved in construction," according to B. R. Lancaster, Vice President and Secretary, "due to use of Stran-Steel Framing, resulted in considerably less cost."

Architect for this building was John D. Martindale, A.I.A., and general contractor was Civilian Building and Supply, both of Fort Wayne.

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A complete system, Stran-Steel Framing is particularly well suited to schools, hospitals, garden-type apartment structures, industrial and public buildings. It has been specified by architects from coast to coast with resulting economies, earlier completion, and client satisfaction. Write us for details on any of your specific projects.

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on Ohio River Flood Wall Project

Terry & Wright Construction Co., Louisville, Ky., has the contract for building a huge flood wall in Covington, Ky., on the Ohio River. The project involves moving nearly 1,000,000 cubic yards of dirt. The Lee Trucking Co. of Ewing, Va., a subcontractor, has the dirt hauling contract. Both companies report that Gulf lubricants are doing an outstanding protection job on equipment.

ANOTHER important construction project where equipment is making an outstanding record of dependable performance with the help of Gulf quality products and service.

Here are a few of the reasons why so many leading contractors prefer the products identified by the familiar orange disc: Gulf lubricants provide an extra margin of protection. Gulf fuels help insure full power. Gulf supplies expert engineering counsel and prompt delivery service. Result: fewer delays, lower maintenance costs, bigger profits!

Let us discuss with you how our products and and services can help you on your next job. They are available to you through more than 1400 warehouses in 31 states from Maine to New Mexico.

GULF

NATIVE SURVEYOR laying out sewage line for new Arab residential camp.

rounder than the average quartz sand and consequently wash through the grit chamber into the Imhoff tanks. Just as troublesome in the sewage as the sand is the enormous quantity of parasites coming from the general condition of disease throughout the population. The sanitary revolution must change the age-old custom of using sand for cleansing purposes, and once this is accomplished the volume of parasites should decrease appreciably in the sewage along with the decrease in sand.

Insect and rodent control is one of the major problems in improving the health of the populace. Malaria control—in brackish oases served by low-head artesian wells—has been effective, but after initial success in combating the swarms of flies with DDT, subsequent use of it produced resistant strains of flies. The present program of fly control has to rely chiefly on improved basic sanitation which takes the engineer back to water supply and sewage disposal, not a small part of which is the training of an illiterate population to use toilets.

Rodent control has become an increasing problem in eastern Arabia because of the emergence of new deep-water ports and the large increase in shipping. The most effective check on the rodents has been the use of Warfarin dry bait in bait boxes, and the spraying of DDT wettable powder which attracts most of the rodents because of some diet deficiency.

("International" cont. on page 87)

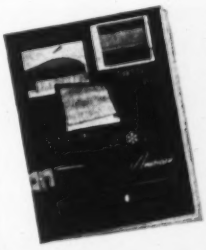
DOORS that "can take it"—
BY INTERNATIONAL STEEL

Four reasons dictated the selection of International Steel doors for the latest unit of the huge Beeler Warehouse project:

- these doors are built to withstand rugged duty
- they are weatherproof
- they are dependable in operation
- they require minimum maintenance

Engineered by International industrial door specialists, fabricated by International Steel craftsmen, 40 one-piece vertical lift doors were installed in this 240′ x 600′ warehouse unit. Along the railroad siding, the doors are 10′ x 8′ while on the trucking dock the doors are 14′ x 8′. All doors are balanced so that they may be easily opened, closed, or partially opened to any position.

International Steel fabricated the framing, also, for this Beeler Warehouse unit.



See the International Steel Industrial Door Catalog in Sweet's. And send for your personal copy of "Doors for American Industry."

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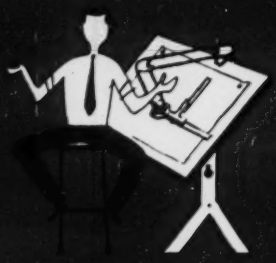
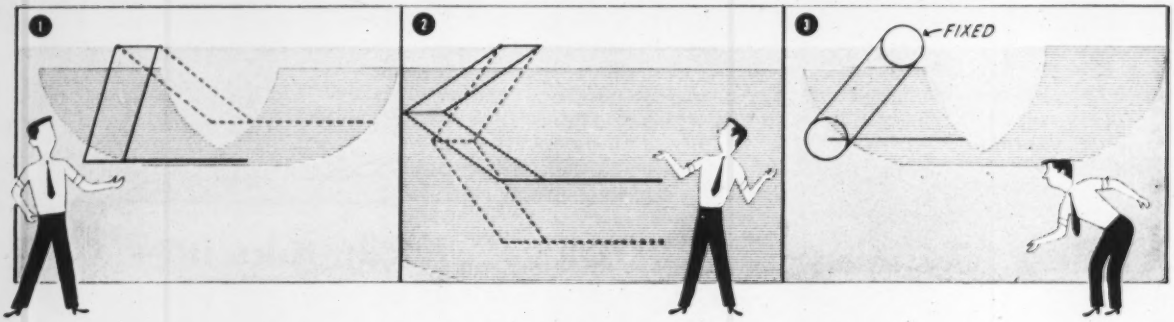


Let's design a drafting machine

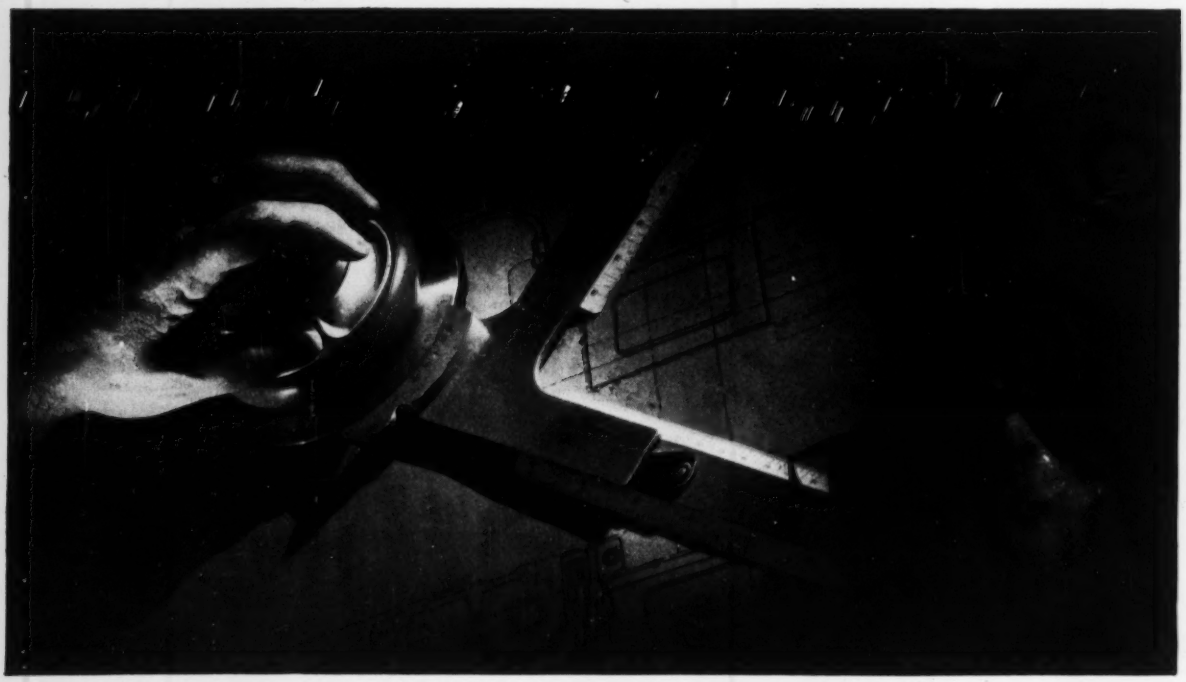
PARAGON® is



Start with a parallelogram somewhat like this. Visualize one of its short sides anchored to the top of a drawing board parallel to your base line, and let the remaining three sides be free to move together. Add a projecting straightedge to the bottom side as shown, and it will theoretically stay parallel to the base line. Parallel lines could be drawn anywhere within the shaded area above. But clearly, that field of action is too limited.

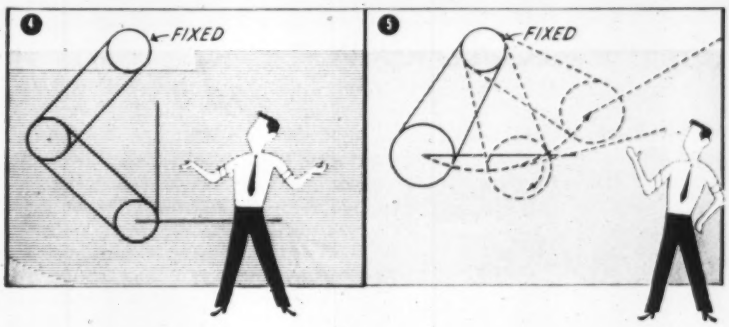
To obtain parallel motion over the entire working surface of the board, a second parallelogram could be coupled to the bottom of the first so that both have one short side in common. An elementary drafting machine would result . . . at least in principle. In practice, it would fall short because the slightest play at any of its 8 joints would create gross error at the straightedge.

What is needed is a better mechanical design based on the same parallelogram principle. Take a pair of rotating drums, connect them with a tight steel band, and the assembly will behave like a parallelogram if the drum diameters are equal. Now couple a second band-and-drum assembly to the first in such a way that they have the middle drum in common . . . and you have the basis of a modern drafting machine.



and find out WHY— "BETTER!"

The Right Angle



The band-and-drum machine, with all three drums of precisely equal diameters and with bands which will not slip, will draw absolutely parallel lines over the entire working area. But if the drum diameters are not equal, the parallelogram principle is violated and the machine cannot draw parallel lines. The greater the difference in diameter the more the lines will be out of parallel.

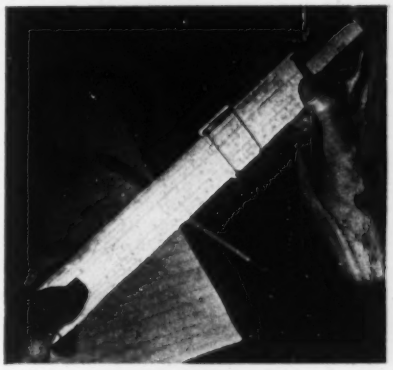
Here, in exaggerated form, is what happens when two of the drums are not equal in diameter. This could occur in either arm of the machine, conceivably in both arms with the errors being additive. From this it is clear that a central factor in the accuracy of a drafting machine is the accuracy of all drum diameters. That is why K&E goes to very extraordinary lengths in this regard in building PARAGON Drafting Machines.

These basic principles and the advanced engineering design in the PARAGON combine to give you the finest in drafting machines. You realize this as soon as you place your hand on the controls.

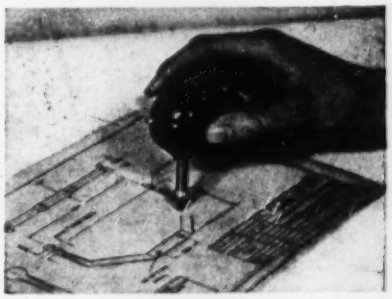
The scales rotate freely with the lightest pressure on the protractor control ring. Release it and they are locked at the nearest 15° position. Intermediate angles are easily set.

Another PARAGON feature is the open center construction of the arms. Even when they are twisted by lifting the head of the instrument off the board, it is impossible to disturb the factory-set band tension.

Ask your K&E Distributor or Branch to tell you about other PARAGON features or give you an actual demonstration.



An engineer without a K&E Slide Rule is like a doctor without a stethoscope. It's the badge of the profession . . . with good reason. The first American-made slide rule was a K&E, and generations have known these rules for their precision, readability and velvet-smooth operation. They come in all types.



After you've once used a K&E MOTORASER,† you'd no more go back to hand erasing than you'd take to drawing with your gloves on. With MOTORASER you can either pin-point your objective, or cover a larger area without damage to the drawing surface. Runs on 110 volt 60 cycle AC, or DC with an inexpensive adapter.

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Plans for Egypt's Nile revamp life-giving river

Plans for a more integrated control of the Nile River—an all-pervading coefficient in Egyptian economy are taking shape under the aegis of Premier Mohammed Naguib's regime.

• **Reclamation**—Most important in the designs for the immediate future is the $25-million reclamation of 80,000 wasteland acres, a project carried out in accord with the United States Point Four program that is putting up $10 million for its part in the agreement. Scheduled for completion by the end of 1960, the reclamation involves 20,000 acres of marshland in the Nile Delta Province of Beheira and 60,000 acres of desert wasteland in Fayum Province 65 miles south of Cairo. The project aims to provide farms for 16,000 landless families.

Desert irrigation at Fayum involves new canals tapping the Nile, while reclamation of the salty marshland at Beheira will require drainage ditches —to run off brackish water to nearby Lake Mariut—and then a system of canals to flush out the salty land with fresh water from the Nile.

• **Hydro station**—Contracts for the construction of new hydroelectric facilities at half-century old Aswan Dam finally have been let (ENR March 28, 1946, p 456, and April 25, 1946 p 677) to two French firms: Grands Travaux de Marseille and Etablissements du Creuset (Iron Works). This $28-million project will have an installed capacity of 280,000 kw.

• **Record dam**—Still in the talked-of stage is the proposed construction of what would be the world's largest irrigation and power dam. The Nile project is to be built four and a half miles south of the Aswan Dam and will have a storage capacity of 100 million acre feet, roughly three times larger than Hoover Dam, and an installed hydroelectric capacity of 1,100,000 kw. German engineers retained by the Egyptian government said that the dam would be stone-faced earth fill four and a half miles long with a width at the base of 2,300 ft narrowing to 160 ft at the top. Cost of the dam, to be called Sadd-el-Aali, would run around $280-million.

Two million acres of desert land could be irrigated by this project, increasing Egypt's arable land by a third. There are large iron ore deposits east of Aswan that will be operated with the Sadd-el-Aali hydroelectric power.

DRAWINGS — SPECIFICATIONS — CHARTS

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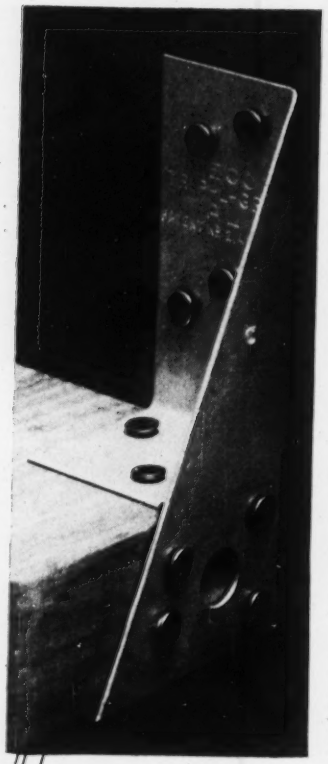

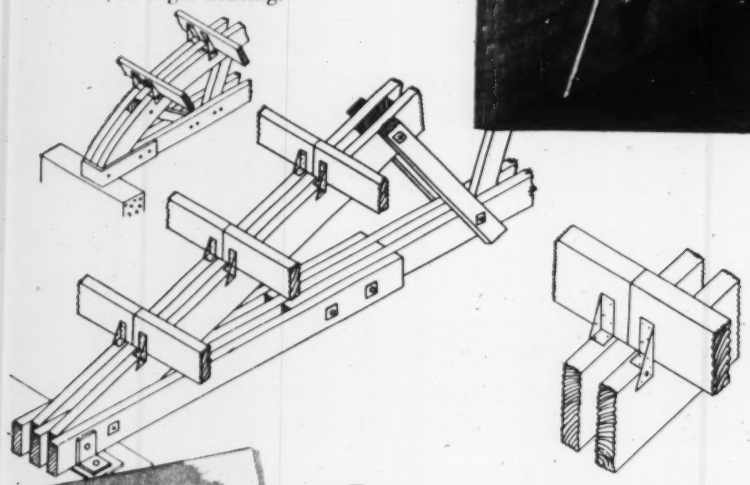

This is only one of the many uses of Trip-L-Grips detailed and illustrated in the FREE booklet, "Aids for Better Homes and Other Wood Construction."

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ENR

International briefs . . .

Gas plant for Japan—The Tokyo Gas Co. will build the world's largest manufactured gas plant on a site obtained by reclaiming a salt marsh. Construction of the $20-million plant will start next fall and is scheduled for completion by 1956. The new plant is part of a five-year program by the company that will almost double Tokyo's gas supply. Tokyo Power Co. is planning to build a 350,000-kw thermal powerhouse adjoining the new gas plant on the reclaimed land.

Tire plant in Holland—General Tire and Rubber Co. of Akron, Ohio, has completed plans, and engineers are on the site for the construction of a tire and tube plant for the U. S. company in Amsterdam. The plant is scheduled to be in operation before the end of the year.

Dikes in Venezuela—An $18-million dike project will be started shortly to open Lake Maracaibo in Venezuela to oceangoing traffic. As part of an overall navigation program costing $48-million—for which oil companies have subscribed half of the total loan issues—the dikes will open a navigable channel 44 miles long and 2 miles wide to open the Lake Maracaibo's ports to deep water vessels.

Record blast furnace in England—The English firm of Ashmore, Benson, Pease and Co. will build what is said to be the world's biggest blast furnace for the Wales Steel Co., Margam, Wales. Expected to be in commission by the end of 1955, the $4½-million furnace will handle between 1400 and 1600 tons a day. Incidentally U. S. Steel will construct a blast furnace in Cleveland, Ohio, this year that they call the world's largest; it is designed for a capacity of 1350 tons a day.

Earth-fill dam for France—Mason, Johnston and Associates, consultants of Dallas, Tex., have been retained by the French government for aid in the design of one of the world's highest earth-fill dams, on the Durance River in southeast France. The 300-ft high dam is to be built in a steep gorge which ordinarily would be more suitable for a concrete structure, but there is a 300-ft layer of sand and gravel in the bed of the Durance that makes it impossible to get adequate foundations for a masonry structure, the engineers asserted. Present record earth-fill dams are Fort Peck, 242 ft high on the Missouri River in Montana, and the 260-ft high Oahe Dam under construction on the Missouri in South Dakota.

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When you need that extra push, you'll be glad your machine is a P&H. With its low center of gravity, better balance and all-welded construction of rolled alloy steels — you can exert more power at the tooth point with less strain or danger of tipping. That's what gives you the *added work capacity*. You can prove this for yourself as many others have done. Ask to see a P&H on a job near you. Watch it work!

And while you're there, watch the mobility on true tractor-type crawlers. Note how smooth hydraulic control enables the operator to "feel" the load at all times. It's easier on both man and machine. And far easier on maintenance. You'll sell yourself on P&H in a hurry.

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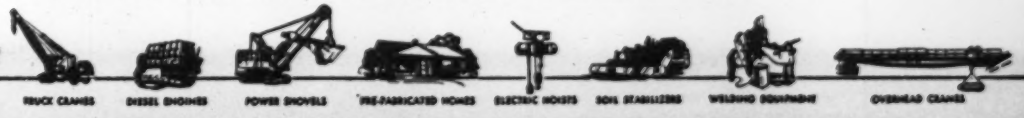

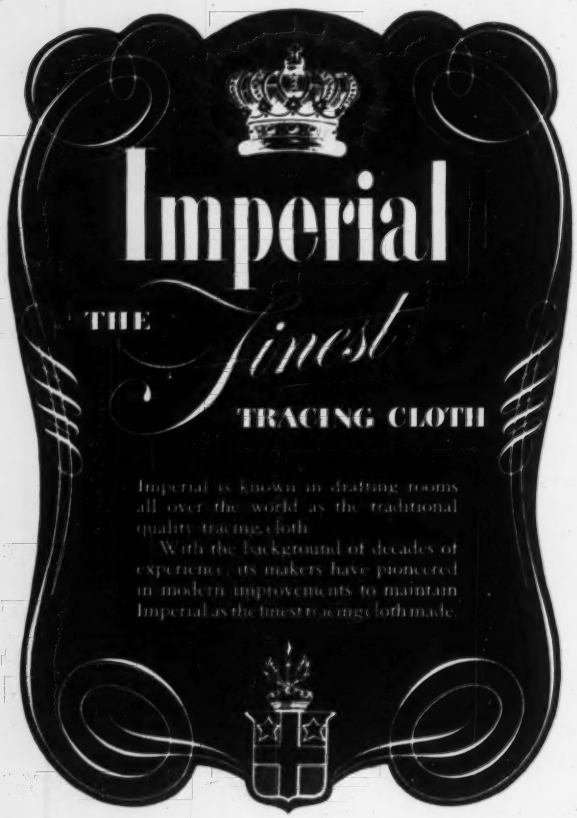
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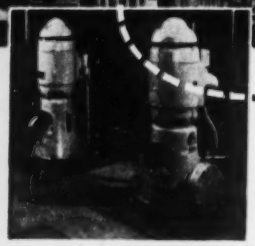


--DEMING TURBINE PUMPS

in service at

UNITED NATIONS

Salt water from the East River is used for air conditioning the U.N. Building in New York City. The river water flows through conduits to the third basement level and is pumped through rotating drum type screens to free it of foreign matter.

Keeping these screens from clogging is the work performed by two Deming Fig. 4700 Vertical Turbine Pumps.

For complete information on Deming Vertical Turbine Pumps write for Bulletin 4700.

DEMING Pumps

THE DEMING COMPANY, 536 BROADWAY, SALEM, OHIO

LEGAL

Faulty supervision of work

"An architect, where supervision is part of the duties assumed by him under a contract of employment, is bound to exercise due care in the performance of such duty and negligence on his part gives the employer a cause of action for damages."[1]

The purchaser of a partly erected building employed an architect to supervise and superintend the completion of the building. After the purchase of the partly erected building, the plans were changed so that some of the floor beams rested on studded partitions. This change constituted a violation of the local building code and resulted in defects developing in the building. The owner brought an action against the architect to recover the damages sustained as a result of the defective construction and was allowed a recovery.[2]

In another case,[3] where the architect was employed to prepare plans and specifications for a building and to supervise and superintend the erection of the same, the architect was held liable for defects in the work resulting from material deviations from what was called for by the plans and specifications. In this case many of the defects and omissions in the work were such as were obvious and discoverable and could have been remedied had the architect exercised due care in the supervision of the work.

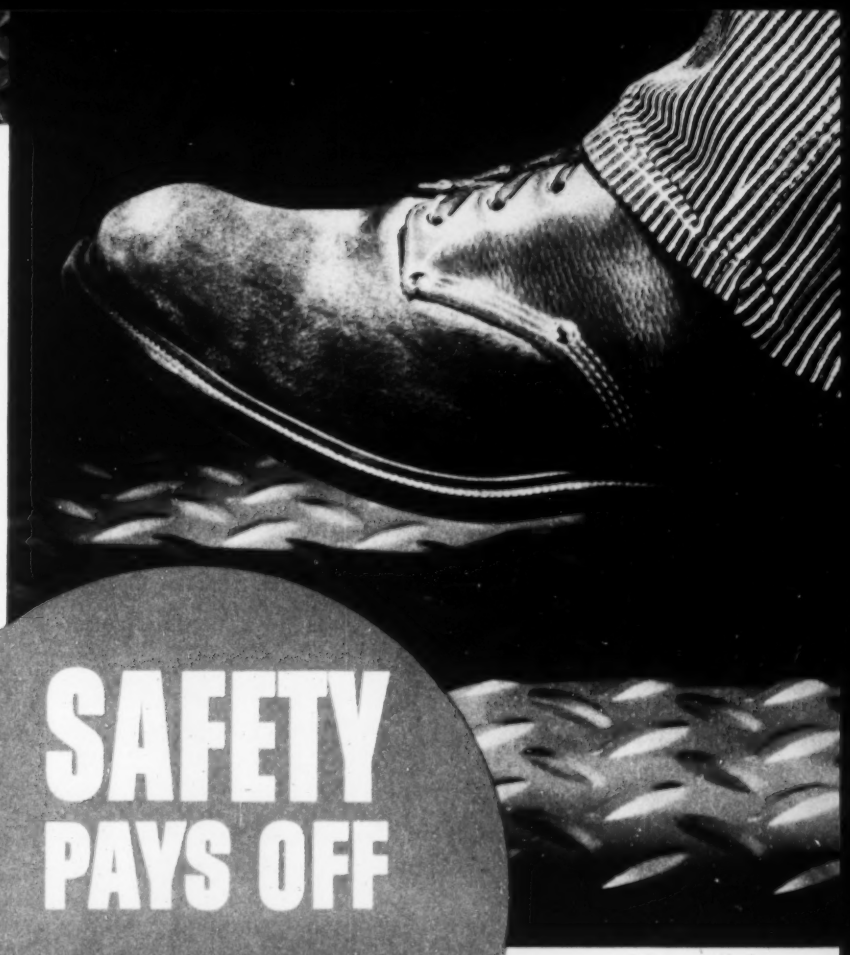
(1) Lindberg v Hodgens, 152 N.Y.S. 229.
(2) Straus v Buchman, 96 App. Div. 270, 89 N.Y.S. 226, affirmed 184 N.Y. 545, 76 N.E. 1109.
(3) Schwartz v Kuhn, 126 N.Y.S. 568.

Architect's compensation upon abandonment of work

An architect prepared plans and specifications for a building strictly in conformity with instructions given by owner. At a conference held in the architect's office, the owner, for the first time indicated that the building could not be erected for $10,000, which was all he intended to spend for its erection. At the time the conference was held, the blueprints were lying on the conference table and were available to the owner, who made no request to see the plans nor did he ask the architect to make any changes in them. When the architect broached the question of compensation for preparing the plans, the owner walked out of the architect's office.

The architect then brought an action[1] to recover for the services ren-

(*Continued on page 95*)



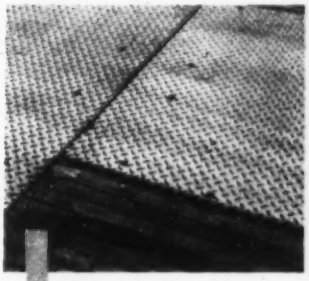
SAFETY PAYS OFF

- Save Man Hours
- Pay Lower Insurance Rates
- Enjoy Better Fire Protection
- Have Happier Employees

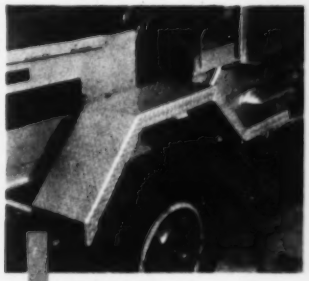
with Industries' first choice of safety flooring-

INLAND

4-WAY® safety plate



for replacement



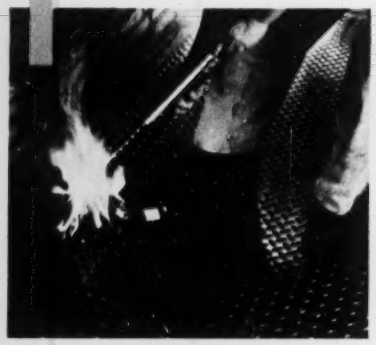
on new equipment

in construction

4-WAY® safety plate

firesafe

4-WAY is popular as a safety flooring in plants and for product use where fire hazards are a problem. Resists intense heat and shock with ease. Eliminates fire risk, reduces insurance costs.

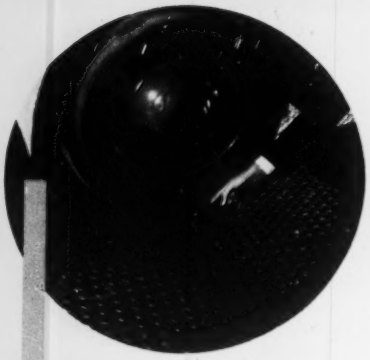


attractive

Popular demand for 4-WAY also results from its attractive appearance, eye-pleasing design. Pattern is uniform in all directions, pieces are easily matched. Looks good even after years of service.

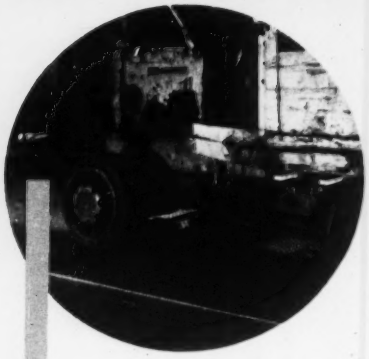
economical

You'll be floored by 4-WAY's low cost! Initial cost is competitive with other flooring materials, installation cost may be less. Repair cost is practically eliminated. Maintenance is trouble-free.



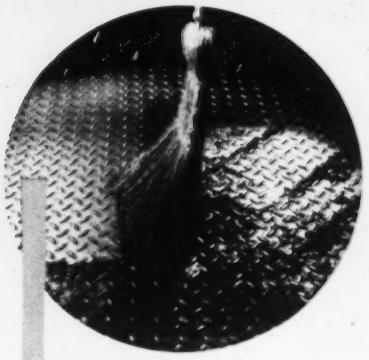
safe

Specially designed raise-lug pattern provides dependable all-weather traction for men and vehicles. STOPS and starts are made quickly, safely—*before* accidents get a foothold.



strong

Rough abuse and heavy loads are taken in stride by this tough, tried and proved steel plate. Made of finest rolled open hearth steel. Withstands great stresses.



cleans easily

Where cleanliness and sanitation are prime factors of importance, 4-WAY provides sanitary flooring with no dirt-catchers. Liquids drain away freely, are not absorbed. (Chemical resistant.) Won't splinter, chip or crack.

there's a 4-WAY® safety plate size and pattern

TO FIT YOUR NEEDS

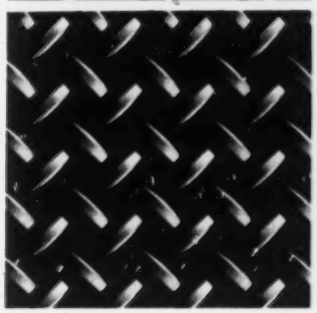
Can be . . . Flame Cut • Sheared • Sawed • Drilled and Punched • Welded • Formed • Spot Welded

Goes down fast and flat, fits snug with a minimum of preparation. You have a safe floor surface ready for instant use.

Easy to fabricate and maintain—with the strength found only in steel. These and other advantages make 4-WAY the outstanding choice of industry. See how safety pays off when you use Inland 4-WAY safety plate.

LARGE PATTERN
recommended for floors that must withstand tough abuse and heavy loads

MEDIUM PATTERN
the most popular and most versatile pattern for use in your plant or on your product



SMALL PATTERN
for applications requiring weight reduction or severe forming

(One-half actual size)

easy to fabricate

4-WAY can be fabricated by any of the conventional processes used on carbon steel plates. On-the-spot cutting, drilling or burning is readily accomplished with standard equipment.

MAIL *for more information*

CLIP THIS COUPON

INLAND STEEL COMPANY
38 South Dearborn Street
Chicago 3, Illinois

Gentlemen:

Please furnish me with the following information on 4-WAY safety plate:

☐ Catalog ☐ Availability and ordering information

Name _____ Title _____

Firm _____

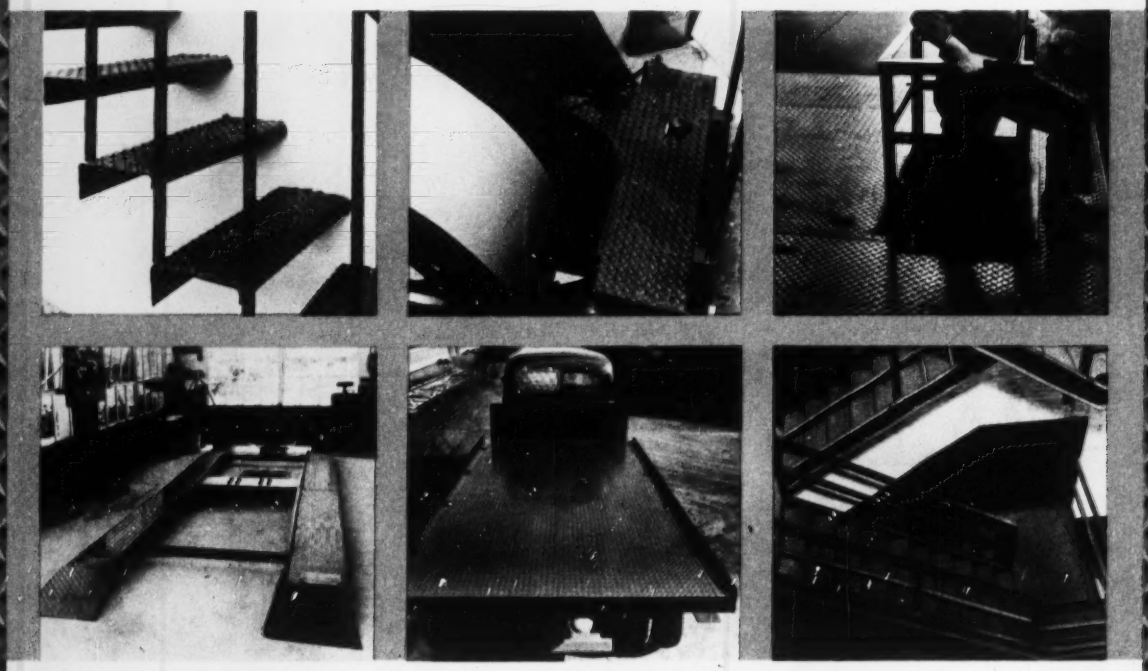
Address _____

City _____ Zone _____ State _____

A B C D E F G H I J K L M N O

Inland 4-WAY® safety plate

PROVED IN USE



Actual use under the most trying conditions has proved Inland 4-WAY the versatile answer to flooring problems. Rugged, long lasting, it combines safety, strength, fire resistance and ease of maintenance all rolled into one. See for yourself how 4-WAY can safeguard you best and save you more. Send for the catalog that tells the complete 4-WAY story.

Stocked by leading steel warehouses throughout the U.S.A. and Canada

INLAND

INLAND STEEL COMPANY

38 South Dearborn Street • Chicago 3, Illinois

Sales Offices: *Chicago, Milwaukee, St. Paul, Davenport, Kansas City, St. Louis, Indianapolis, Detroit, New York*

dered in preparing the plans and specifications. The owner interposed the defense that there had never been any tender of the plans and specifications on the part of the architect. The court held that under the above circumstances, a formal tender of the plans and specifications by the architect would have been a vain and futile act which the law does not require.

As to the right of the architect to recover compensation, the court in its opinion stated:

"In 6 C. J. S., Architects, Section 14, the textwriter states: 'Where the architect prepared plans and specifications for building pursuant to an unconditional order or direction by the owner, he is entitled to recover for his services whether or not the plans are used if they substantially comply with the employer's instructions. So his right to compensation will not be defeated by the fact that the building for which the plans are prepared was never constructed nor the fact that the time is not such as to render it expedient to build.'"

As to the question of the necessity of the architect to tender the plans and specifications as a condition to the architect's right to recover, the court said: "In 6 C. J. S., Architects, Section 14, it is said: 'In order to entitle the architect to compensation for drawing plans there must be a delivery of the plans prepared, although it has been held that where the owner refuses to accept the plans no tender is necessary in order to entitle the architect to compensation, as he is not required to do an idle act.'"

(1) Doup v Almand, 207 S.W. 2d 601, 212 Ark. 687 (Supreme Court of Arkansas, 1948.)

Where prospective builders accepted the advice of architects towards complete plans and said nothing when the architects suggested changes and where the owners actively accepted the architects' labors, a contract for complete plans resulted even though the original negotiations indicated an employment of a limited scope.[1]

"Where a person, with reasonable opportunity to reject offered services, takes the benefit of them under circumstances which would indicate, to a reasonable man, that they were offered with the expectation of compensation, a contract, complete with mutual assent results. 1 Restatement, Contracts, Section 72 (1) (a)."

The court held that since the contract did not fix the amount of compensation that the architects were to receive, they were entitled to recover the fair and reasonable value of the

(Continued on page 98)

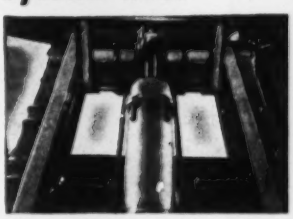
For better performance in HEAVY-DUTY HOISTS ...insist on St.Paul

NOW stress-proved and WORK-RATED for lowest cost per payload hour

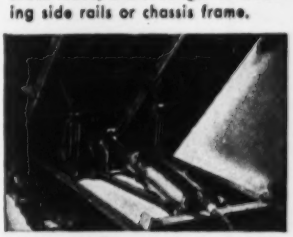
You profit two ways by choosing St.Paul for heavy-duty hoist installations: (1) *NEW stress-proved design* (with 50 advanced improvements) assures better all-around hoist performance. (2) *NEW conservative ratings* — based on practical field experience — mean St.Paul hoists deliver every ounce of capacity shown in the ratings, with plenty to spare!

Consequently, more and more St.Paul users are finding that they can haul *consistently full payloads for more hours, with substantial savings in down-time and hoist maintenance* — doubly important in heavy-duty operations!

For convincing proof, see your St.Paul Distributor. Or, better still, equip several of your trucks with new St.Paul heavy-duty hoists and *let your cost records speak for themselves!* St.Paul Hydraulic Hoist, Customer Service Dept. 36117 Main St., Wayne, Michigan.



New sliding tension bars absorb shock loads, avoid danger of cracking side rails or chassis frame.



New equi-lift strut arms equalize stresses, prevent binding or buckling from uneven load conditions.

S-HC-2

OUR 41st YEAR

St. Paul HYDRAULIC

Hoists
Dump Bodies
Refuse Loaders

TOURNATRACTORS

outproduce crawlers despite double haul distance

Tournatractor-scrapers move 1839 station yards hourly, crawler-scrapers 687, on Iowa highway job

Tournatractor with scraper heaps 12 pay yds. of clay in average of 75'. When not busy pulling scrapers, rig did pusher duty. Says George Lowe, "Tournatractors have plenty of power." Adds Operator Gerald Otting, "I like Tournatractor for a pusher because it's fast and easy to handle."

Time studies taken recently on Lowe Construction Company's 220,750-yd. relocation job near Cedar Rapids, Iowa, reveal some interesting comparisons on production of rubber-tired Tournatractors vs. crawler-tractors.

Pulling same size scrapers (17½ yds. heaped), both Tournatractors and crawlers averaged 12 pay yards of clay per load. Haul times, however, varied widely. Tournatractors, with 19 m.p.h. top speed, regularly made a *4200'* cycle every 6.8 minutes. Crawlers, with top of 6 m.p.h., completed a *1900'* cycle every 8.35 minutes. Tournatractors averaged 9 m.p.h. on haul and return, for 7¼ trips hourly . . . crawlers averaged 3.4 m.p.h., for 6 trips hourly. In other words, Tournatractors made more trips per hour despite a haul distance double that of the crawler-tractors. On a station yard basis, Tournatractors moved 165% more dirt than the crawlers — 1839 to 687 station yards per hour.

COMPARATIVE TIME STUDIES

Project: Relocate U.S. 30 for overpass of Rock Island Railroad line. Required 37' fill to raise level of approach road 7' above overpass columns.

Location: 6 miles south of Cedar Rapids, Iowa

Contractor: Lowe Construction Co., Marion, Iowa

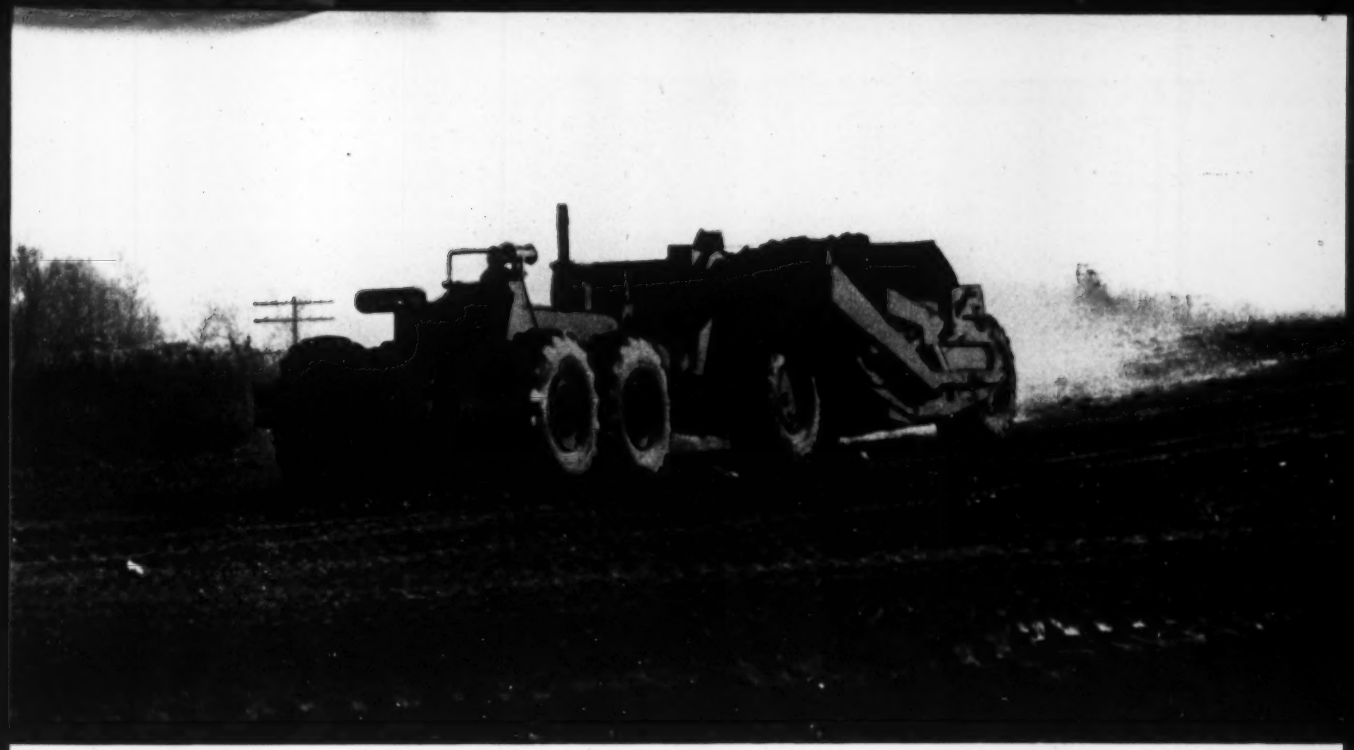
Material: 222,750 yds. moist blue and yellow glacial clay loaded from borrow pits.

Tournatractor-scrapers vs. crawler-scrapers

	Equipment	Cycle Time (average)	Yards per trip	Trips per 50-min. hr.	Pay Yds. per hr.	Station Yds. per hr.
One-way haul of 2100' with 550' of 5% adverse grade	Tournatractor-scraper No. 1	6.57	12	7.6	91.2	1915
	Tournatractor-scraper No. 2	7.09	12	7	84	1764
	Tournatractor av.	6.88	12	7.3	87.6	**1839**
One-way haul of 950' with 120' of 10% adverse grade	Crawler-scraper 1	8.18	12	6.1	73.2	706
	Crawler-scraper 2	8.54	12	5.9	70.8	672
	Crawler-scraper 3	8.34	12	6	72	684
	Crawler-scraper av.	8.35	12	6	72	**687**

LeTOURNEAU LET EQUIPMENT

WHY CRAWL WHEN YOU



Works faster and cheaper

Here's why Tournatractors beat the crawlers: constant-mesh "instant-shift" transmission put the rubber-tired tractor's 19 m.p.h. speeds to most efficient use. Operator did not have to stop or slow down to change gears. 186 h.p. with rubber-tired traction helped Tournatractor get a heaping load fast. Rig then highballed to the fill fast—at speeds up to 19 m.p.h.—without losing vital momentum. With the fast acceleration, high speeds and exceptional mobility, rubber-tired Tournatractor will lick any track-type tractor on the market, regardless of haul length. It will put more pay yards on the fill . . . more dollars in your pocket.

Let us prove our case by showing you the Tournatractor in action on your job. If you would like more information, or if you would like to arrange for a demonstration, send in the coupon below. There's no obligation.

Send NOW to

R. G. LeTOURNEAU, Inc., Peoria, Illinois

Tell us more about rubber-tired Tournatractor

Name ..... Title.....

Company .....

Street .....

City ..... State.....

☐ Would like demonstration on my job

T-308-H

"Tournapulls good all-around machines"

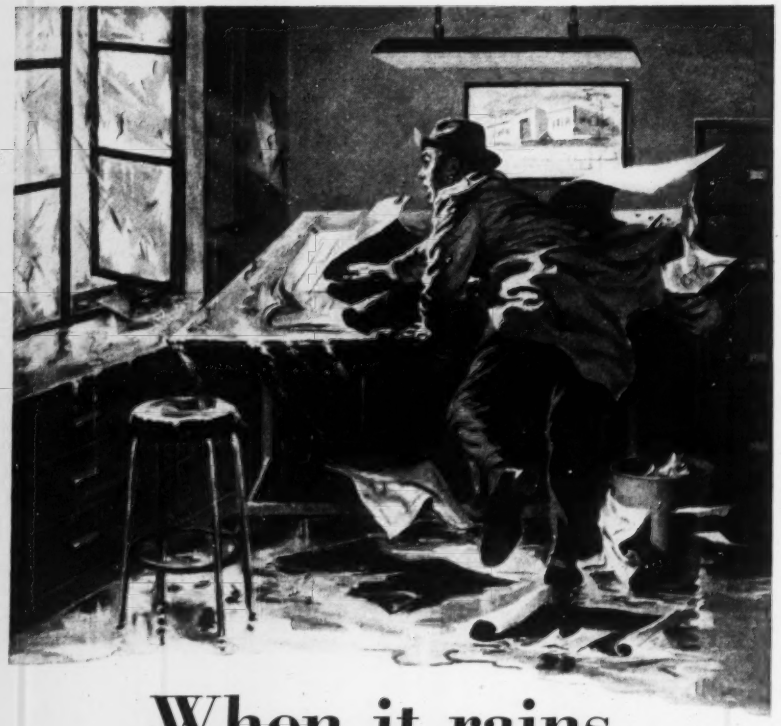
Lowe's 5 D Tournapulls worked same 4200' cycle as the 2 Tournatractors. In first 70 working hours, this fleet of 7 rubber-tired units moved a total of 32,000 pay yds. (by cross-section). Prior to this job, 4 of the "D's" did 235 miles of ditching near Cedar Rapids . . . traveling in a 250-mile radius job-to-job under their own power. One 130-mile trip took Tournapulls 7 hours. Owner George Lowe says, "There's no more versatile machine on ditching than this D Roadster. We've had exceptionally good work with them." Adds Grade Foreman Thomas Clark, "For shouldering, you can't beat the 'D Tournapulls. They're good all-around machines . . . good in mud, too."

Tournapull—Trademark Reg. U. S. Pat. Off.
Tournatractor—Trademark T-308-H

CAN RUN ?

R. G. LeTOURNEAU, INC.

Peoria, Illinois



When it rains,
it sometimes pours destruction

(A true story based on Company File #118B6875)

We're architects — and when we locked our trim little office one evening we never expected it to look so different the next morning.

What a mess it was after that sudden thunderstorm! Broken windows. Water everywhere . . . on the floor . . . on the cabinets. Worst of all, on our drafting table.

We'd been working on a bank job, and were almost finished. Now every tracing was ruined! The cost of making new ones would have come out of our own pocket if we hadn't carried Valuable Papers Insurance. Our policy paid us back every cent it cost us to re-do the tracings.

Are you sure *your* drawings, blueprints, notes, books, maps or other valuable papers are completely safe from disaster?

Not only storm. But fire. Water. Even earthquake . . . explosion . . . riot . . . building collapse . . . damage by burglars, or sheer vandalism.

Nobody in the construction business should take this chance. Protect yourself against financial loss (even loss which occurs off your own premises) with adequate Valuable Papers Insurance.

Ask your Hartford Accident and Indemnity Company Agent or your insurance broker to give you full details about this essential, low-cost protection. You'll never regret it.

Year in and year out you'll do well with the

Hartford

Hartford Fire Insurance Company • Hartford Accident and Indemnity Company
Hartford Live Stock Insurance Company • *Hartford 15, Connecticut*

services rendered, even though the building was never built because expected sources of building loans failed to materialize.

(1) Jones et al. v Brisbin et al., 247 P. 2d 891, Supreme Court of Washington, Sept. 12, 1952.

When contract is silent as to compensation

Where a contract is silent as to the compensation to be paid for services rendered or incidental materials furnished, the law implies that the party furnishing such labor and materials will be paid the fair and reasonable value thereof.[1] The following two cases illustrate this point.

A contract was entered into for the performance of work on a unit price basis. The contract provided for unit prices for three items: (1) Earth excavation; (2) Clearing of the land and (3) Grubbing. During the performance of the contract, the contractor encountered a substance known as "cemented gravel" which was more expensive to excavate than ordinary earth. In view of the fact that the contract contained a unit price only for "earth excavation," the engineer classified the cemented gravel as earth excavation. The contractor then brought an action to recover for the removal of the cemented gravel on the basis of the fair and reasonable value of excavating the same, claiming that since the material excavated was not earth and since no unit price was fixed for the removal of this class of material, the contractor was entitled to be compensated for this part of the work on the basis of fair and reasonable value. The decision that was reached by the court sustained the contractor's contention.[2]

In another case,[3] the court in discussing the right to recover for work done under construction contracts stated that the law implies an agreement to pay for such work. "If the law implies an agreement to pay, how much is to be paid? There is but one answer. The fair value of that which is furnished. No other rule can be applied. Under certain conditions the price fixed by the contract might control in such cases. In this case there was no price fixed."

(1) Lee v National Cylinder Gas Co., 58 So. 2d 569.
(2) W. W. Brown Const. Co. v Macarthur Bros., 139 S.W. 104, 236 Mo. 41.
(3) Vickery v Ritchie, 202 Mass. 247, 88 N.E. 835.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

GENERALS

GO IN – GET THE LOAD – CARRY IT OUT and OVER THE HIGHWAY

"OFF-THE-ROAD" "ON-THE-ROAD"

FASTER! EASIER! At Less COST!

General D. T. L. with deep, sharp, angled cleats and sturdy, high shoulder lugs. Designed for maximum traction on soft surfaces—forward or backward.

General H. C. T. for trucks that go off-the-road to pick-up, deliver loads. Free-rolling tread and stronger body for more miles, more safety.

Make Every Worn Tire Work Longer for More Profit!

Your GENERAL TIRE DEALER will KRAFT SYSTEM RECAP Worn Tires with the New GENERAL Truck Tire Tread of Your Choice

KRAFT SYSTEM RECAPPING
A GENERAL TIRE SERVICE

You're throwing away money when you throw away worn tires or accept an ordinary "adjustment" for them. Let your General Tire Dealer—a tire expert—restore worn tires with famous factory controlled Kraft System Recapping. You choose from the complete line of on and off-the-road new General Tire treads and he'll put that tread on your worn tire. He can do sectional repairs too. Get Kraft System Recapping—get more profit from every tire.

SPECIFY GENERAL TIRES ON YOUR NEW EQUIPMENT

Mobile CONCRETE MIX PLANT

21-FOOT discharge

(HIGHER WITH SPECIAL BOOM)

KOEHRING 16-E *twinbatch,* with 6 m.p.h. rubber-tired mobility and high elevating boom, has unlimited application on all types of concrete construction work . . . for buildings, retaining walls, pilings, culverts, bridges, tunnels, widening highways and airport strips, batching into trucks, etc. Bucket rides on 60° elevating boom . . . discharges controlled batch into overhead forms, hoppers or chutes at a dumping height of 21 feet (higher with special boom). Boom also swings in an arc of 160° . . . speeds pouring of floors, foundations. This heavy-duty 16-E easily mixes and distributes up to 50 cu. yds. per hour. 7-second skip hoist, split-second Autocycle mixing controlled by Koehring Batchmeter, and vertical syphon-type water tank, all assure consistent, maximum-strength concrete at top batching speeds.

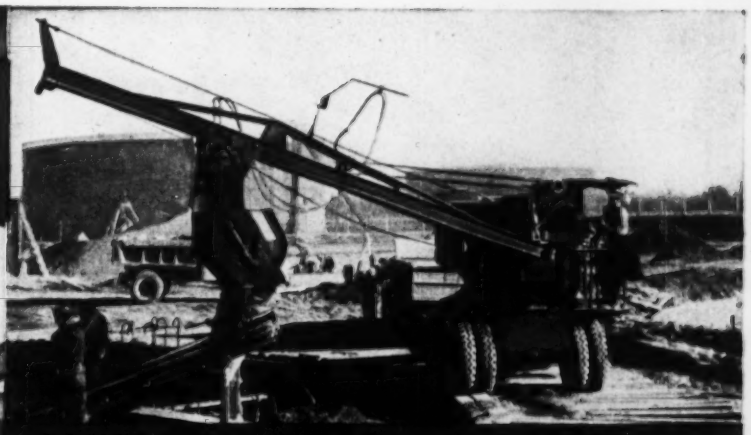
Productive work-time is increased because mobile, rubber-tired 16-E works over pavement without planking, makes self-powered moves job-to-job at 6 m.p.h. Get more facts from your Koehring distributor, or write for literature.

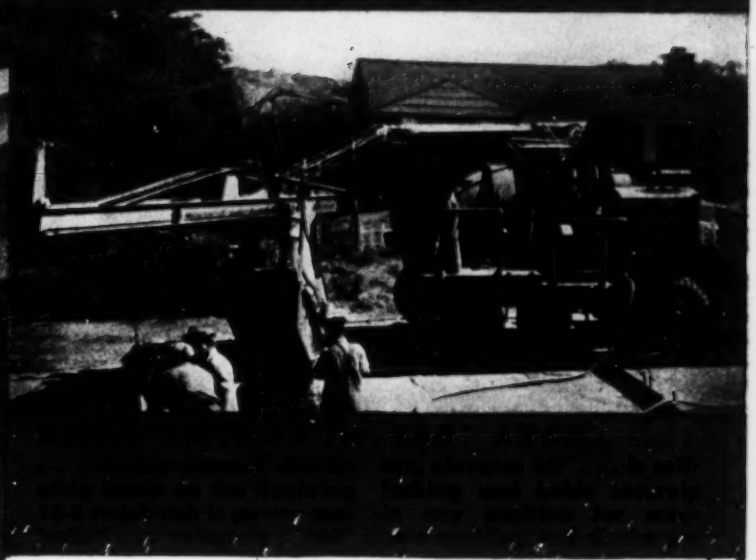
KOEHRING CO., Milwaukee 16, Wis.
(Subsidiaries: JOHNSON • PARSONS • KWIK-MIX*)*

KOEHRING HEAVY DUTY

KOEHRING 16-E *twinbatch*®

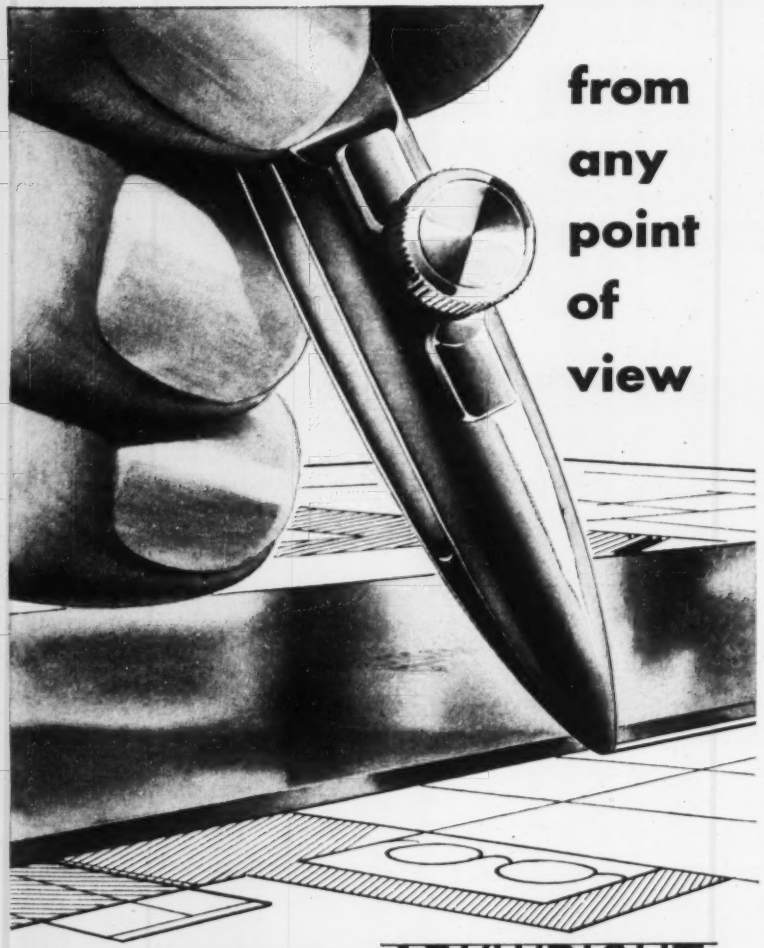
height





SET-UP FOR CENTRAL-MIX

Producing concrete for factory floors and footings on a building construction job (below), a Johnson Lo-Bin® Trolley Batcher weighed the materials . . . Koehring 16-E *twinbatch* handled all mixing, and discharged concrete into overhead storage hopper . . . Kwik-Mix 10 cu. ft. Moto-Bug® power wheelbarrows hauled and poured the concrete into building forms.



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Arkwright Tracing Cloths are made to help you do your best work more easily.

Arkwright cloth saves time. There's never a pinhole, uneven yarn or other imperfection to slow you down.

Arkwright cloth saves trouble. You can draw over erasures time and again and not have an ink line "feather".

Arkwright cloth saves money. If needed, you can get clean, ghost-free reproduction from a drawing years after you make it—years after paper or inferior cloth would have turned brittle and opaque with age.

Wouldn't you like to see for yourself why Arkwright Tracing Cloth is best? Write for samples to Arkwright Finishing Co., Industrial Trust Bldg., Providence, R. I

ARKWRIGHT
Tracing Cloths
AMERICA'S STANDARD FOR OVER 30 YEARS

BOOKS

• **Water Quality Criteria**—California's Water Pollution Control Board has announced that its publication titled "Water Quality Control" (ENR Sept. 18, 1952, p 30) is now ready for distribution. A limited number of copies are available from the State Water Pollution Control Board, 927 Tenth St., Sacramento 14, Calif., without charge to agencies directly concerned with pollution abatement. Others may purchase copies from the Documents Section, State Printing Division, 11th and "O" Sts., Sacramento 14, Calif. Price is $3 per copy, postpaid, plus 9 cents sales tax for California addresses.

• **Landfill in the North**—Test operations at Mandan, North Dakota, prove that sanitary landfill operations can be carried out effectively in extremely cold climates—down to −44°F. Thus, the most economical sanitary means of refuse disposal will work in a northern state where, in 1948, 129 of 135 municipalities used open dumps. They had not the population to pay for incineration; they discounted feasibility of sanitary landfill because of winter weather. The U.S. Public Health Service put an engineer in Mandan (pop. 7,300) for two years. Recommendations coming out of the studies: Scarify area before first frost and plow in leaves as insulation; excavate trenches in advance; stockpile cover, insulating with leaves; use stockpiles as wind-break; heat garage and tractor cabs. Decomposition of organic refuse was found slow in cold ground. In fact, it is incomplete after two years at Mandan. A possible catalyst warrants more study, according to this report—"The Sanitary Landfill Method of Refuse Disposal in Northern States," available from Superintendent of Documents, Wash. 25, D. C., for 20 cents.

Reports and Pamphlets

CONCRETE CURING—Reprint No. 8, Virginia Council of Highway Investigation and Research, Charlottesville, Va.

TENTATIVE STANDARD SPECIFICATIONS FOR STEEL PIPE FLANGES—American Water Works Association, 521 Fifth Ave., New York 17, New York. 25¢.

60 MILLION DRIVERS WANT UNIFORM TRAFFIC LAWS—National Committee on Uniform Traffic Laws & Ordinances, 18th and F Streets, N. W., Washington 25, D.C. 10¢.

LUCKY YOU: THE TRAVELERS 1952 BOOK OF STREET AND HIGHWAY ACCIDENT DATA—Public Information Department, The Travelers Insurance Companies, Hartford, Conn.

SAVE STEEL

. . . and Money, too!

Beautiful and strong, a bridge is a proud example of man's genius for building. *This* bridge shows man's genius for economy, too. It's built with reinforced concrete!

Reinforced concrete bridges cost less to build. They are rugged and highly resistant to wind, shock, and quakes. They allow a flexibility that leads to imaginative, beautiful design. Furthermore, materials are readily available from local sources.

build with REINFORCED CONCRETE

Cortright Creek Arch, Mt. Rainier National Park

CONCRETE REINFORCING STEEL INSTITUTE • 38 South Dearborn Street, Chicago 3, Illinois

Avoid Breakdowns!

Keep your motorized equipment "in the pink" with Delvac Oils—they keep engines clean!

One shift per day or round-the-clock operation—whatever the demands on your Diesel and heavy-duty gasoline engines, you can keep them on the job *more continuously* by protecting them with famous Delvac Oils!

A new *super-detergent* formula now enables Delvac Oils to keep engines *amazingly clean*. These top-quality oils resist oxidation and foaming, guard bearings, pistons, cylinders and rings against corrosion and wear. Your engines last longer, need fewer repairs and overhauls, produce power more efficiently. You stay on schedule more easily—save on fuel, oil, maintenance.

Ask your Socony-Vacuum Representative for Delvac Oils—recommended or approved by leading engine and equipment builders.

Here's Practical Help for Contractors...

Socony-Vacuum gives you...

- Help on maintenance problems.
- Individual, tested lubrication schedules.
- Advice on correct handling, storage and application of lubricants.
- One source of supply—available everywhere.
- Simplified inventory—with...

1. **DELVAC OILS**—for all gasoline and automotive-Diesel engines.
2. **MOBILUBE GX**—multi-purpose gear lubricant for all enclosed gears—manually operated transmissions, rear axles and final drives.
3. **MOBILGREASE**—in types and grades for proper lubrication of all chassis parts and engine accessories.

DELVAC OILS

Delvac 900 Series Oils: Under API Classification, recommended "For Services MS, DG."
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Correct Lubrication for Contractors

THE FLYING RED HORSE COMPANIES: SOCONY-VACUUM OIL CO., INC., MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP.

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GENERAL UTILITY DITCHER
...to dig fast...keep costs down!

This BUCKEYE model 407 will dig straight and curved ditches and undercut obstructions. It is compactly designed for work in close quarters yet handles the widest range of work . . . Digs to 8 ft. depths in 17, 19, 22 and 24 in. widths at lowest possible cost . . . Easy to spot on the job — digs right up to walls and foundations . . . Stable operation on side slopes and low ground bearing pressure to avoid surface damage . . . Handles all types of municipal, utility and pipeline work at minimum hourly expense . . . Built to exacting Buckeye standards set by over 60 years experience in building every known type of ditcher . . . Get complete details from your dealer and remember —

Only Buckeye has a Ditcher for every Ditching Job!

BUCKEYE WHEEL-TYPE DITCHERS

Give you cutting widths of from 10" to the big 51" pipeline machine. You'll find that no matter what type of ditcher best solves your own job problems — BUCKEYE makes it!

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F-538

OBITUARIES

William P. Creager dies, hydraulics authority

William P. Creager, 75, a world authority on hydraulics and author and co-author of many books and sections on the subject, died last week at Buffalo, New York.

Mr. Creager, sometimes in association with the late Joel D. Justin and others, and on other occasions on his own, was author of such standard engineering texts as "Engineering for Dams," "The Hydro-Electric Handbook," the section on hydraulics of dams in the "Handbook for Electrical Engineers" and a similar section in the book "Reinforced Concrete and Masonry Structures," "Engineering for Dams" (with Justin and Julian Hinds), and numerous other papers.

His activities in the field of hydraulics included the following: Member of the executive committee of the American Society of Civil Engineers Committee on Soil Mechanics and Foundations; chairman of the ASCE's power division; a member of the Committee on Concrete Dams.

He was an honorary member of the ASCE.

A native of Baltimore, Md., Mr. Creager was graduated from Rensselaer Polytechnic Institute in 1901, and later received a doctorate of engineering from the same school. After graduation, he joined the New York State Barge Canal as a designer of locks and dams, until 1906.

He joined the J. G. White Engineering Corp. as a designer in 1906, and was that firm's chief engineer on hydraulic structures when he left the organization in 1922, to become vice president and chief engineer of Northern New York Utilities Corp., and the Power Corporation of New York. He remained with that combine until 1930, when he entered private practice as a consultant.

Theodore Barbato, 64, a consulting structural engineer of N. Y. City, died there April 6. A 1910 Cooper Union graduate, he served on the building code committee of White Plains, N. Y.

J. Gordon Turnbull, 62, a construction engineer who designed and built many of the country's leading automobile and aircraft plants and military and atomic installations, died in Los Angeles, April 1. He was consulting engineer for the design and construction of the River Rouge plant of the Ford Motor Co., the Knolls atomic

laboratory at Schenectady, N. Y., and many General Motors plants. In the last war he supervised construction of several Air Forces Bases here and in Alaska, Great Britain and Japan.

Roland V. Johnson, Jr., 42, a T. V. A. civil engineer, formerly a resident of Bowling Green, Ky., died recently at Nashville, Tenn.

Joseph W. Jones, 56, a lifelong employee of the engineering department of the Baltimore and Ohio R. R. Co., died in Townson, Md., March 10. In 1946 he was appointed Eastern regional engineer at Baltimore, and he had been named senior assistant engineer on Feb. 1, 1952. Among Mr. Jones' more important projects were: second track between Dickerson and Point of Rocks, Md.; car retarders at Cumberland, Md.; Elk Creek spur, Overfield, W. Va.; coal handling facilities at Howland Hook, N. Y.; import ore pier, Curtis Bay, Baltimore, and the new tunnel No. 1 at Clarksburg, W. Va.

Allan A. Abbott, 46, vice-president and general manager of the Brunner Asphalt & Construction Co. Inc., Buffalo, N. Y., died March 26. Prior to joining Brunner last May, Mr. Abbott was general manager of the Warren Bros. Construction Co. in Syracuse, N. Y., for ten years.

James S. Whitney, 31, a partner of Ammann & Whitney, New York and Milwaukee consulting engineers, and a 1943 civil engineer graduate of Cornell University, apparently drowned while spear fishing near Nassau in the Bahamas March 27. A thorough search of the area Friday, March 27, and Saturday, March 28, failed to reveal any trace of Whitney, the Associated Press reported. His home was at Oyster Bay, N. Y., but he had been living in Milwaukee, Wis., while working on the expressway there.

Frank H. Alcott, 62, building codes consultant and structural engineer for the National Lumber Mfgrs Assn. for 17 years, died at Jamaica, N. Y. C., March 16. He was a C.E. graduate of R.P.I. 1915. Mr. Alcott had been employed by NLMA as a consulting engineer on building codes for the Northeast, with headquarters in New York, since 1940. He also worked for the association as a building codes consultant and structural engineer in New York from 1928 to 1932.

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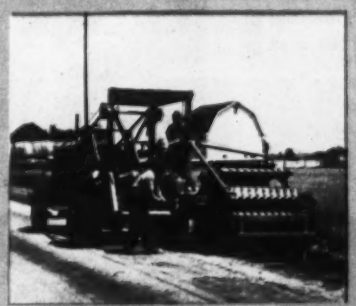
FINEGRADERS and HI-WAY WIDENERS

Buckeye Surface Material Spreaders are available in models to give 9′, 10′ and 12′ widths of spread. Materials are spread exactly where wanted — to controlled depths with clean cut edges. No excess material to be raked up later by hand! . . . Flow can be regulated for either uniform or tapered spread — from a mere sprinkle up to 2½″ depth. . . . Width of spread can be narrowed in 6″ multiples.

BUCKEYE POWER FINEGRADERS

Cut the grade right to specs ready for paving! Two sizes in widths adjustable up to 25 ft. One man operation.

BUCKEYE HI-WAY WIDENERS



Dig flat bottom, clean ditches up to 48″ wide and 18″ deep, ready to receive material. Does not delay traffic on roads. Digs up to 1 mile per day . . . One man operation.

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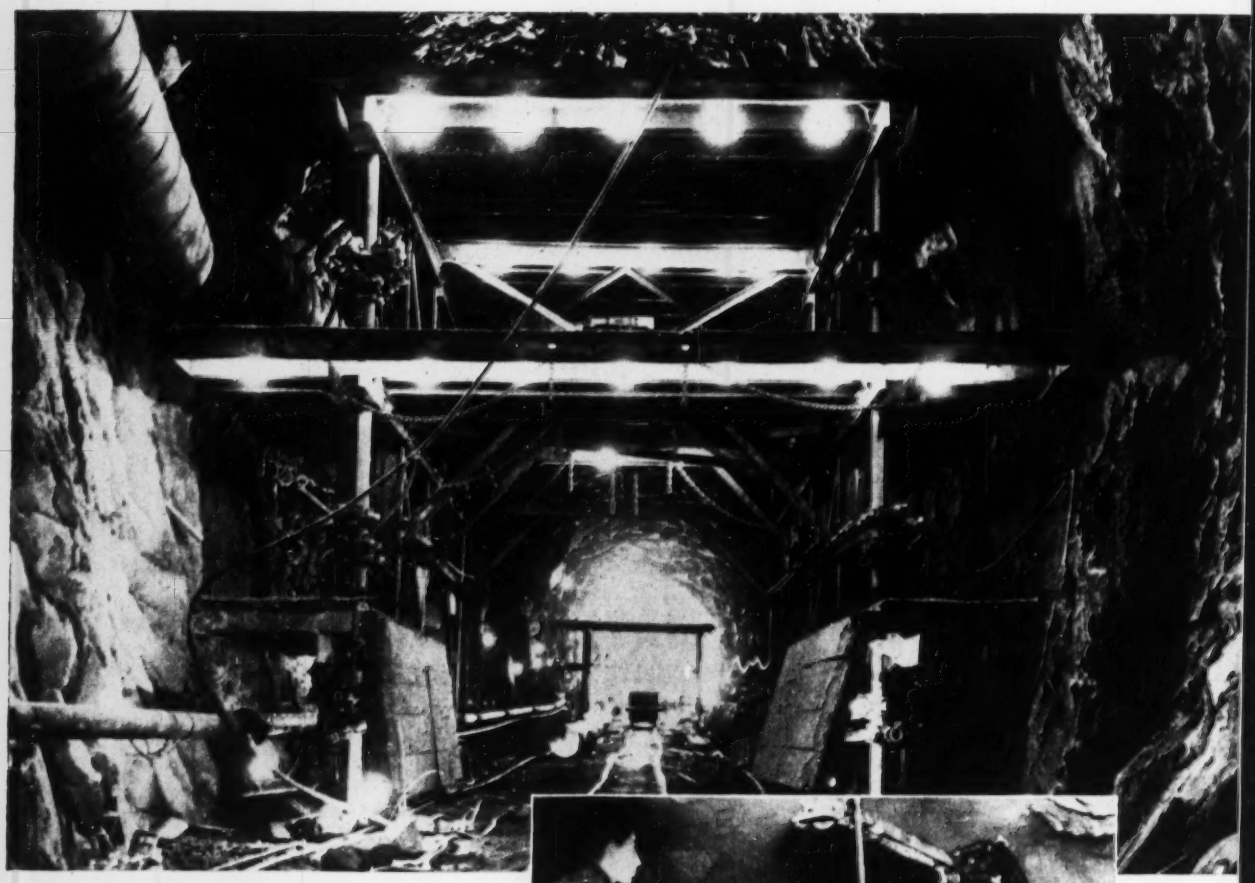
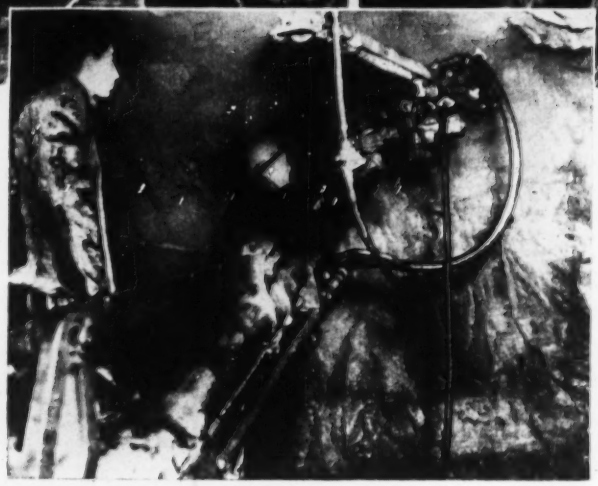
World's Tunneling Record



Front end of the 3-deck drilling jumbo pulled back from the Kemano heading of the power tunnel while mucking was in progress. This carriage mounts a total of fifteen Ingersoll-Rand DA-35 power-feed 3½-inch Drifters.



Here, one of the Boom-Jumbo mounted DA-35 drifters on the top deck of the drill carriage, is putting in a top hole.

OTHER FAMOUS JOBS WHERE WORLD TUNNEL RECORDS WERE MADE WITH INGERSOLL-RAND DRILLS

1921 Hetch Hetchy Project
1922 Big Creek Project
1932 Hoover Dam
1940 Carlton Tunnel
1940 Delaware Aqueduct
1944 Alva B. Adams Tunnel
1948 Rock Creek Bore
1949 Big Creek Dam
1950 Owens Gorge

broken **FOUR TIMES** on Alcan B. C. Project

Ingersoll-Rand Drifters and Carset Bits in 25′ Heading set new world's records of 248, 258, and 261 feet in six days

...then raised it to 274 ft.!

Analysis of drilling –

Total footage for week (6 days)	274
Total volume or rock in place (cu. yds.)	6165
Number DA-35 drills on Jumbo	15
Number of holes drilled each round	96
Number of rounds drilled	27
Average daily advance (feet)	45.67
Average advance per round (feet)	10.15
Average cu. yds. of rock removed per round	228.6
Average drilling time per round	1 hr. 24 min.
Average footage drilled per round	1132

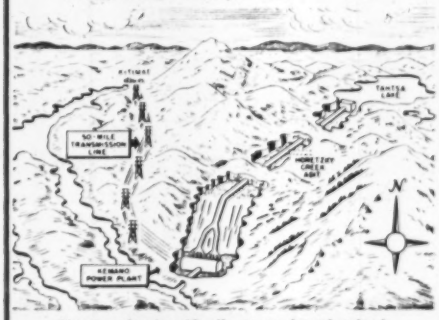


Diagram showing 10-mile power tunnel extending from Tahtsa Lake to underground power plant on Kemano River. Water will drop 2600 feet through penstocks to generate electric power for the aluminum smelter at Kitimat 50 miles distant.

ANOTHER world tunneling record has been broken – not once, but *four times* on the same job!

During the week ending September 29th, 1952, Canadian drilling crews of the Morrison-Knudsen Company of Canada, Limited, drove 248 feet of 25-foot diameter horseshoe bore in six days at the Kemano heading. This eclipsed the previous record of 241 feet of 24′ tunnel, made by M-K tunnelers at the Big Creek Number 4 dam in California in 1949.

In October and November the Kemano crews shattered their own records by driving 258 feet, then 261 feet in six day periods.

For the six day week ending November 29th the Alcan aces topped their previous footage by driving 274 feet at the Horetzky-Tahtsa heading at the midway point of the tunnel.

These world records for tunneling speed were all made with Ingersoll-Rand DA-35 Power Feed Drifters with 48″ aluminum shells, using 1¼ lugged round steel and 2″ Carset Jackbits.

The ten mile bore in British Columbia will carry water from the impounded Tahtsa Lake area through the Coast Range mountains to the huge Kemano underground power plant. It is part of the half-billion-dollar "Alcan" Project of the Aluminum Company of Canada, Limited, that will add tremendously to the economic production and wealth of North America.

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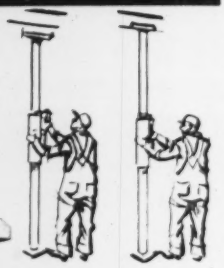
THE SIMPLE WAY TO SHORE LOADS UP TO 9,900 LBS.

Put Up Safway Shoring in 2 EASY STEPS



STEP 1
Extend upper member of Safway shoring close to approximate height. Fasten with pin.

STEP 2
Rotate sleeve nut to elevate head to exact height.

● **It's microadjustable to exact height.** Sleeve turns ¼" per turn. Each thread is tested to 40,000 lbs. Threads are protected against rust and damage.

● **It has up to 9,900 lb. capacity** for 7-foot length . . . a safety factor of 3 to 1. In most cases you need no bracing up to 12 feet and then at greater heights you can use standard Safway tubular steel pivoted cross braces, or lumber.

● **Just 3 shore sizes** cover a complete range from 6 to 15½ feet. Each size has a 5-foot adjustment range. Collar centers upper tube and maintains the load directly overhead. There are three types of heads available for a variety of service conditions.

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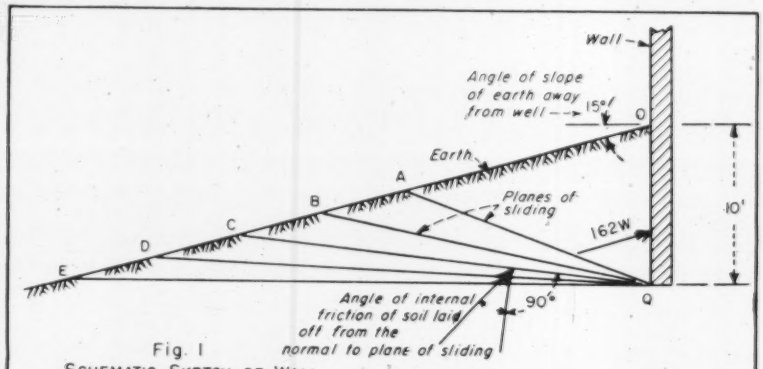


Fig. 1
SCHEMATIC SKETCH OF WALL AND BACKFILL

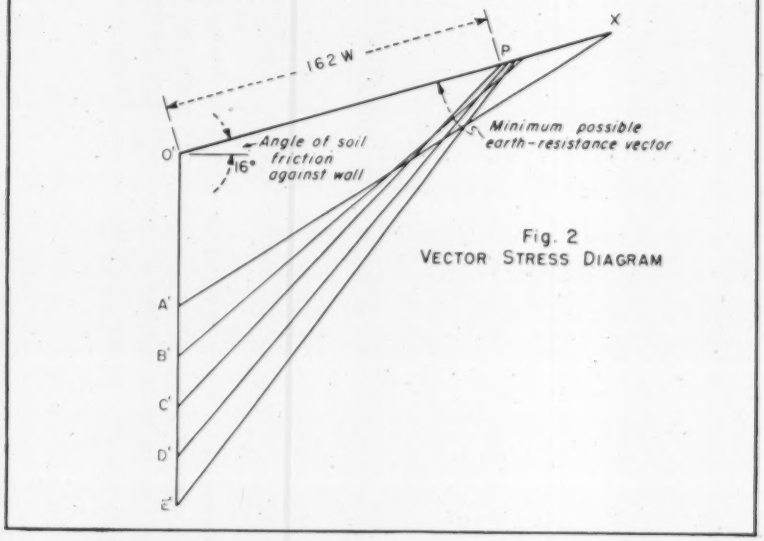


Fig. 2
VECTOR STRESS DIAGRAM

GRAPHICAL SOLUTION of passive earth pressure on walls and bulkheads.

Vector solution of soil pressures

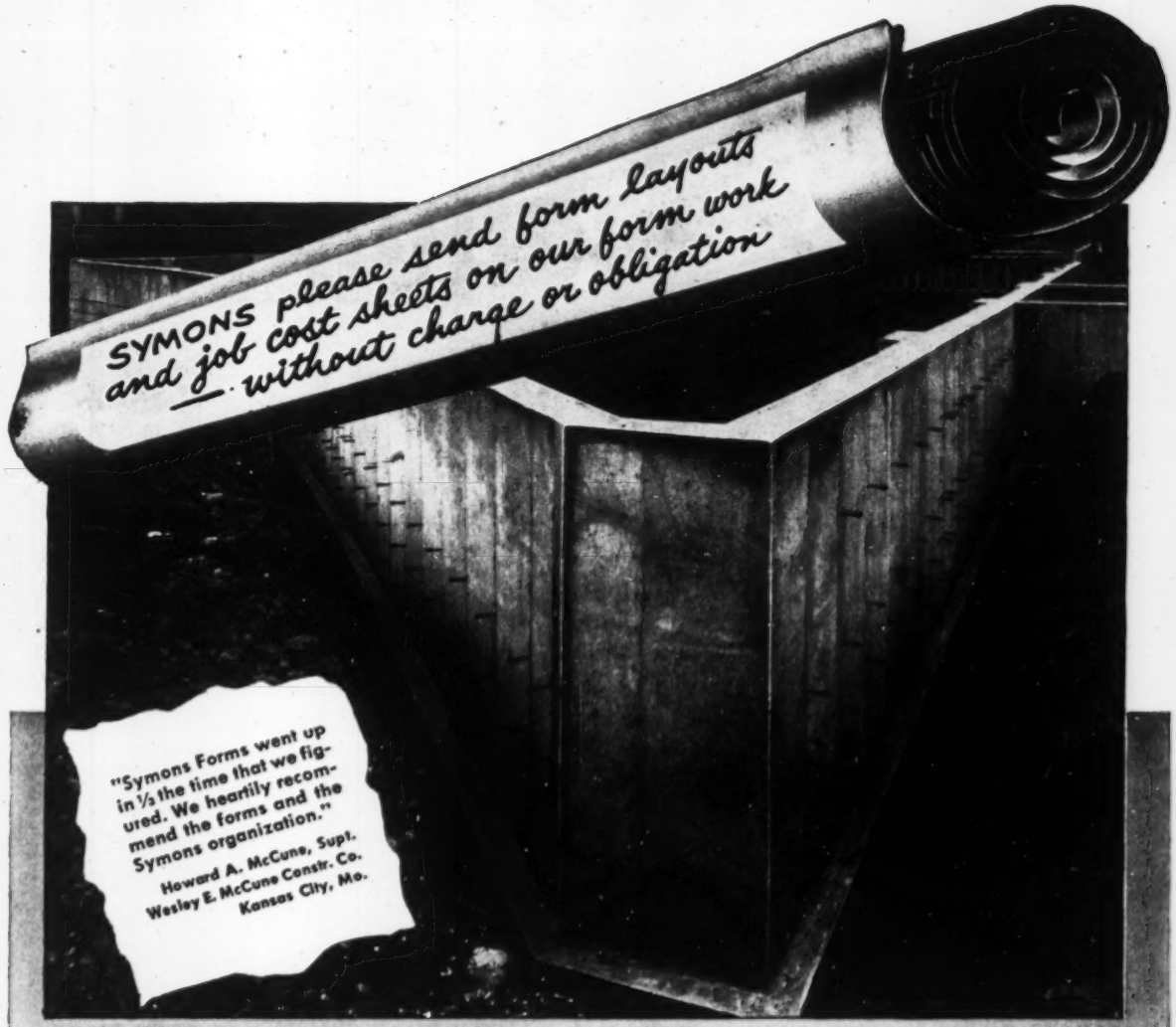
Passive pressures in underwater soil that slopes downward away from sheetpile bulkheads are difficult to obtain from the standard Coulumb equation, because of the uncertainty of plus or minus signs for the angles of slope and friction. Also, Poncelet's and Culmann's graphical solutions are rather lengthy. For this type of problem, however, the graphical solution simplifies computations considerably.

In Fig. 1, the angle of internal friction in the soil is assumed to be 35 deg, the weight of the earth w lbs per cu ft, and the angle of friction of earth against the wall 16 deg. This angle could be zero, but many engineers assume that friction against the wall increases passive resistance. It is included here and increases the resulting resistant force.

On the ground slope, OE, points A, B, C, D, are marked off, at convenient distances horizontally from the wall, OQ, and the areas of triangles AOQ, BOQ, etc., are computed. These areas are measures of the weight of soil per foot of width and are laid off vertically on the stress diagram as O'A', O'B', etc., in Fig. 2.

Surfaces AQ, BQ, etc., in Fig. 1; are possible planes of sliding. The resisting forces along these planes are at angles of 35 deg with the normals to the planes. The vectors representing these forces are drawn in Fig. 2 from A', B', C', etc. Vector O'X, drawn at the assumed angle of friction (16 deg) with the wall, will then give the

(Continued on page 114)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The centrifugal casting process—the most modern of all methods of producing cast iron pressure pipe—has been adopted by all members of the Cast Iron Pipe Research Association.

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The same basic metal which has proved its ability to function for more than a century in water supply and distribution mains, is still used. By research in metallurgy and the centrifugal casting process, cast iron pipe has been modernized and made tougher, stronger and more uniform in quality.

Cast iron pipe is available with *cement mortar lining, centrifugally applied.* This is *modernized* cast iron pipe—with *sustained carrying capacity* for the life of the pipe. Since it is tuberculation-proof it has greatly reduced friction-loss with resultant reduction in pumping costs.

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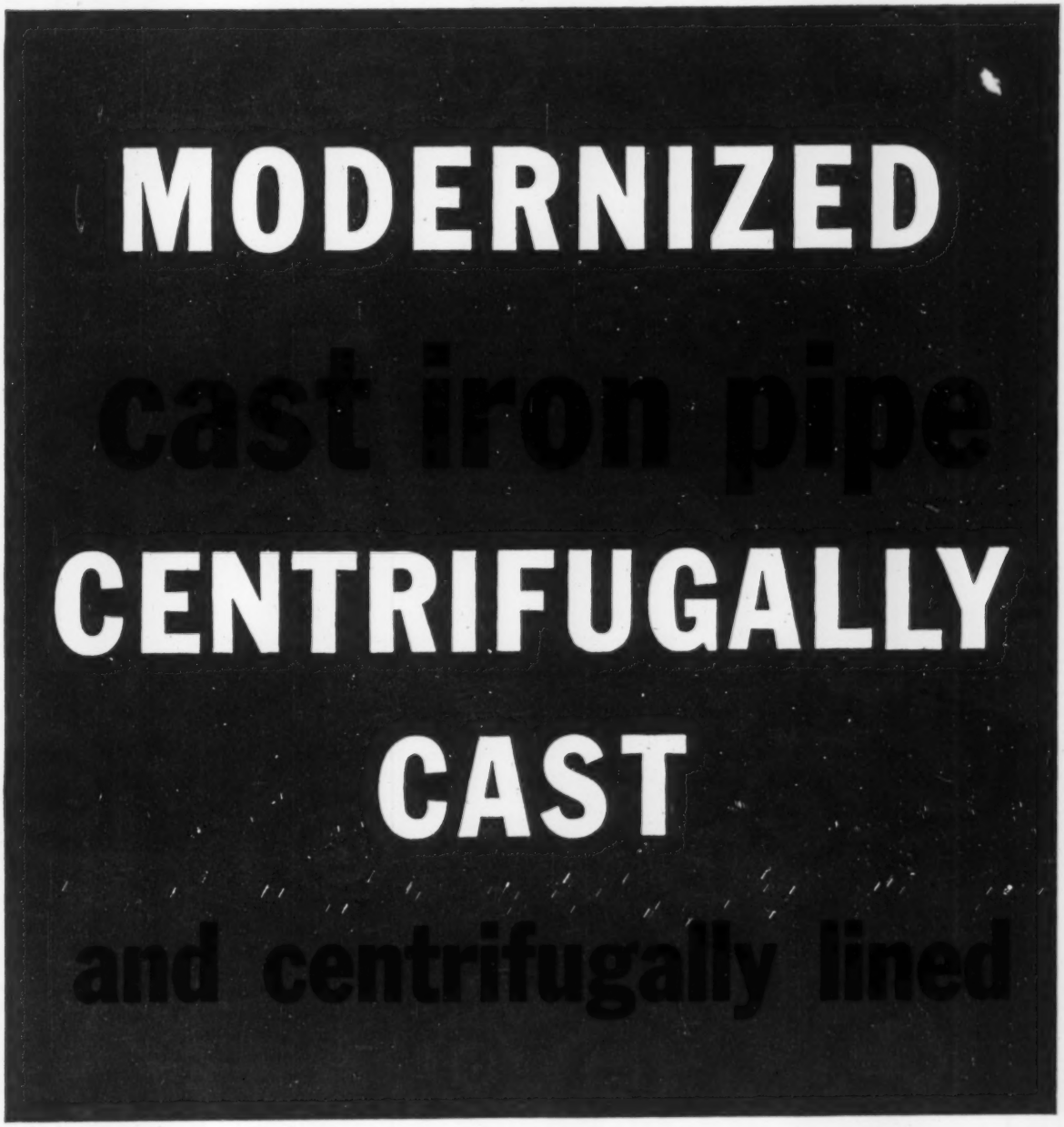


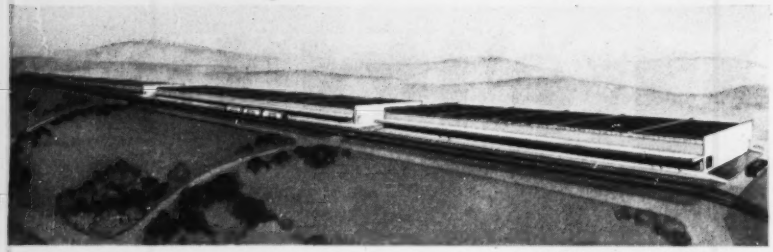
pipe

for Modern Waterworks Operation

earth resistance per foot of length. The minimum value of this vector, OP, is the minimum resistance offered by the earth, in this case 162w.

The Coulumb theory is based on the assumption of plane failure for passive resistance, and the critical plane for failure is that one for which the passive thrust is a minimum. Therefore, enough vector rays must be drawn to locate the minimum length of the vector OP in order to find the minimum possible earth resistance. Then, from Coulumb: $\frac{1}{2}p_p H^2 = 162w$, and since $H = 10$ ft, $p_p = 3.24w$, the equivalent hydrostatic passive pressure per sq ft per ft of depth.—W. D. Bigler, *Structural Engineer, Long Beach, Calif.*

HOW FRANKI FOUNDATION COMPANY Saved $17,000 For U.S. Quartermaster Corps



Three warehouses, U. S. Quartermaster Corps Depot, New Cumberland, Pa., Architect-Engineers—The Kuljian Corp., General Contractors—Hughes-Foulkrod Co., both Phila., Pa.

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• Original specifications called for conventional spread footings through fill to virgin soil at 8' to 25' below finished grade. When contractor determined savings, time and materials with Franki Pressure Injected Spread Footings, he received approval from the Army Engineers and the Kuljian Corp., subject to a load test. One of 687 Franki Footings, tested at 165 tons (design load — 110 tons), settled 0.12" gross . . . net settlement 0.04". Result—Government saved over $17,000.

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. . . LIGHTEN YOUR COSTS . . . INCREASE YOUR LOAD! . . .

Send for "Franki Facts" for complete information about the U. S. Quartermaster Corps project — and an illustrated booklet describing the Franki Foundation method in complete detail. Write Franki Foundation Company, 114 East Fortieth Street, New York.

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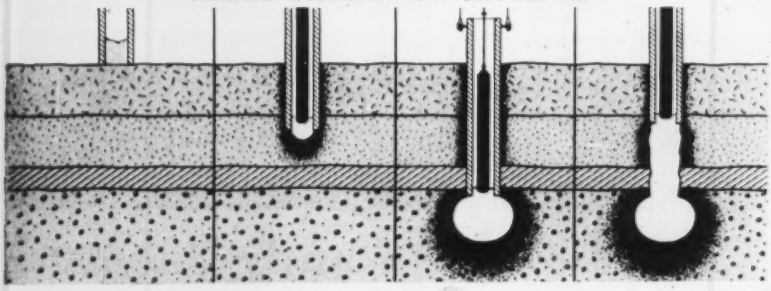

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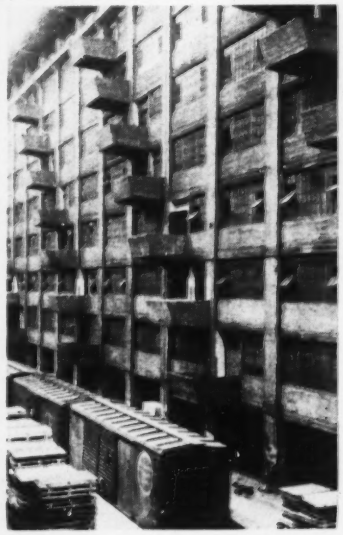

Freight handling speeded

Stepping up freight-handling operations at the U. S. Army's N. Y. Port of Embarkation in Brooklyn involves one of the largest elevator modernization programs ever undertaken. Sixty-two of the installation's 90 elevators are being converted to lift 20,000 lb at 200 fpm —double the capacity and speed of those installed when the terminal was built 32 years ago. Water shipments are handled at three two-level piers equipped with 18 elevators. Rail shipments are received in a "well" between two main storage buildings each 980 ft long as shown in the photo. Three means of handling freight are employed: (1) By fork-lift trucks and the 72 elevators in the two warehouses; (2) By overhead traveling crane to bridge at third floor level and thence to elevators by powered trucks. (3) By crane to the balconies at each floor level.

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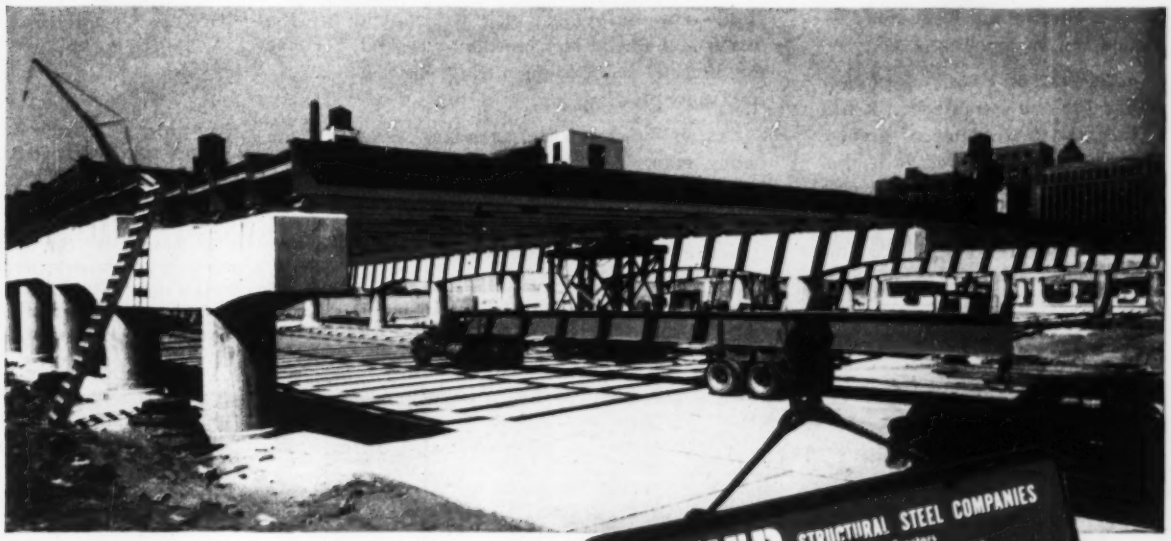

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Yes, sir, Tractair is truly a money-saving handy man. See for yourself — watch Tractair at work. Ask your nearby Le Roi distributor to show you one.

Write today for job-data sheets and bulletins on Tractair.

Why rent or buy specialized equipment? For a fraction of the cost, you can do the same work with this Tractair and attachments.

Tamping — Tractair puts air to work running Le Roi-CLEVELAND backfill tampers. You get faster, easier tamping; better compaction; lower costs. A good example of how Tractair teams up with Le Roi-CLEVELAND air tools to save time, work, money.

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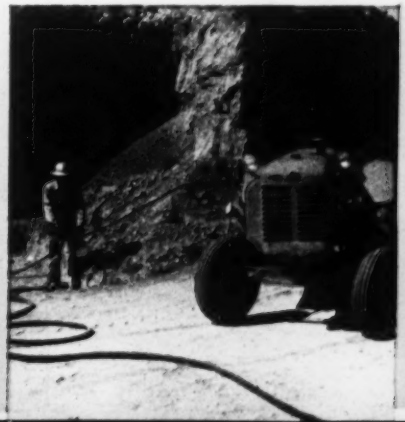
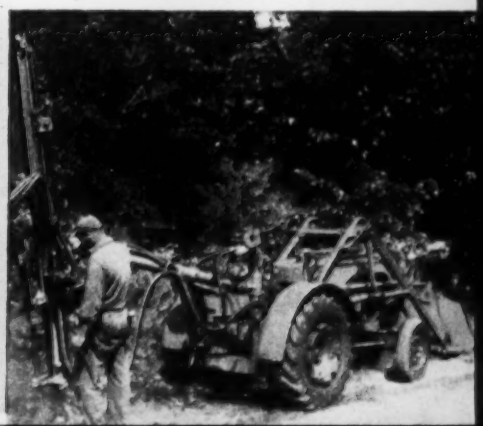
Mobildrill — With this lightweight wagon-drill attachment on Tractair, one man can drill vertical and horizontal holes at any angle and any elevation up to 12 ft. Swinging boom permits drilling 4-6 holes of a pattern from one spot.





POWERFUL • ECONOMICAL • EASY TO HANDLE

5 year Experience

with HUBER three-wheel roller leads Charlotte, N. C. to buy another HUBER

HUBER Three-Wheel Rollers are their own best salesmen — a big percentage of owners have come back for their second, third and fourth HUBER machines.

Charlotte, N. C., municipal officials bought their second HUBER on the basis of 5-year experience with their first one.

R. A. Robinson and O. B. Torrence, old hands at the operation of heavy equipment, find HUBER 10-Ton Three-Wheel ideal for their municipal needs. They praise its powerful and economical diesel engine, its year-after-year dependability and its ease of handling.

HUBER Three-Wheel Rollers, available in 8, 10, 12 and 14-ton sizes, are making friends wherever they go. Let your nearest HUBER Distributor tell you and SHOW you the design and construction features that have made them a favorite wherever rollers are used.

HUBER MANUFACTURING CO. • Marion, Ohio, U. S. A.
Manufacturers of Huber Maintainers, Graders and Complete Line of Rollers

HUBER

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.
ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

Mass., Boston—B.A. 4/23—State, Metropolitan Dist. Comn. Sewerage Div., 20 Somerset St., Framingham Trunk Interceptor Sect. 134, 10,520 ft., 36 and 42 in. rein.-con. pipe sewer in trench, 607 ft. 36 and 42 in. tunnel, 49 in. twin 18 in. siphon, 11,176 ft., Natick-Framingham, $750,000. Plans deposit **$10**, refundable. CD 12/31/51.

BIDS ASKED—BUILDINGS

Conn., New Haven—EQUIPMENT—B.A. 4/22—Southern New England Telephone Co., 227 Church St., 11 story, steel, rein.-con., limestone trim equipment bldg., with 3 story penthouse, Orange and Wall Sts. CD 8/5.

SOON LETS CONTRACT—BUILDINGS

Conn., North Haven—FOUNDRY, etc.—Pflueger Foundry, Inc., College Highway, Cheshire, Conn., soon lets contract 1 story, 80x190 ft., masonry steel foundation 30x40 ft. office connecting wing, Washington Ave. Schilling & Boldbecker, 405 Temple St., New Haven, archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

CONNECTICUT—State Hy. Dpt., State Hy. Office Bldg. Hartford,

S & M Constr. Co., 30 Salmon St., Providence, R. I., LB, **$782,945**, 12,555 lin. ft. bit. macad. pavement on relocation of Route 8, and rein.-con. box culvert, Colebrook;

Simpson & Whitehouse Constr. Co., RFD No. 1, Mansfield Center, Conn., LB, **$192,725**, about 5.521 ft. b. conc. on relocation Route U. S. 6 at intersection of Rte. 91, Chaplin. Bids Mar. 30. CD 3/18.

BUILDINGS

LOW BIDS AND CONTRACTS

City, School Bldg. Comn., Keene, N. H. rejected bids Mar. 25, GYMNASIUM addn. to High School, Roxbury St., KEENE, N. H. LB **$303,757**, CD 4/1 under LB.

Wright & Morrissey, Inc., 158 Bank St., Burlington, Vt. CA. Approx. $400,000. central OFFICE, RUTLAND, VT. New England Telephone & Telegraph Co., 50 Oliver St., Boston, Mass. Bids May 6. CD 4/23/52.

Construction Units, Inc., 199 Washington St., Boston, Mass. CA $935,504. Edw. Devotion Elementary SCHOOL, Harvard St., BROOKLINE, MASS. Town Bldg. Comn., Town Hall, Brookline, Mass. CD 3/10, under LB.

Raymond A. Brown, 225 Walnut St., Dedham, Mass. Owner Builds. $600,000. 50 RESIDENCES, DEDHAM, MASS. CD 4/1.

Mass., Pittsfield—SHOPPING CENTER—Joseph A. Powers, 156 Benedict Rd., did not award contract for shopping center. Est. $900,000. Ernest F. Carlson, Inc., 1694 Main St., Springfield, engrs.-archts. Sears Roebuck & Co., Boston, Mass., lessee. (Correction-status). CD 3/31, under CA.

▲ **C. J. Maney Co., Inc.**, 24 Dane St., Somerville, Mass. CA $2,193,000. Bldg. A wholesale food TERMINAL, 30 N. Central St., ROXBURY, MASS. Massachusetts Wholesale Food Terminal, Inc., c/o Thomas Worcester, Inc., archt. engr., 85 State St., Boston, Mass. CD 3/18, under LB.

Walter Scesny, W. Acton St., Stowe, Mass. CA Est. $750,000. 40 RESIDENCES, WESTBORO, MASS. West Acres Constr. Co., Westboro, Mass.

Frouge Constr. Co., 74 Goodsell St., Bridgeport, Conn., LB, $323,570, Proj. B/A -B 88, girl's Middle Grade COTTAGE, Training School;

D. Bracchi, 485 Main St., Stamford, Conn., LB, $354-547. Proj. B/A -B Girls COTTAGE No. 34, Training School, SOUTHBURY, CONN. State P. Wks. Comr. State Office Bldg., Hartford, Conn. CD 1/16/52.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

Md., Easton—B.A. 4/20—Mayor and Town Council, M. Evelyn Startt, town clk., constr., installation 2 pumping stations, appurtenances, fixtures and fittings for completing imprvs. to municipal sewerage sys. Plans deposit $10, W. H. Corkran Jr., town engr., adv ENR 4/16.

† **Delaware**—B.A. 5/5—U. S. Eng., 12 N. Broad St., Phila., Pa., dredging entrance to Chesapeake and Delaware Canal, Delaware City, New Castle Co. $100,000. CD 3/27.

▲† **N. J., Wrightstown**—SEWAGE TREATMENT PLANT, etc.—Bids Asked—U. S. Eng., 121 N. Broad St., Phila., Pa., sewage treatment plant and pumping station, ENG-36-109-53-241, $1,200,000. Extended date. CD 3/12.

▲† **N. J., Wrightstown**—SWITCHING STATION SUBSTATION, etc.—Bids Asked—U. S. Eng., 121 N. Broad St., Phila., Pa., switching station sub-station, electrical distr. and street lighting sys., McGuire Air Force Base, ENG-36-109-53-457, $1,500,000. Extended date. CD 2/19.

BIDS ASKED—BUILDINGS

▲ **N. Y., Depew**—HIGH SCHOOL—B.A. 4/22—Bd. Educ., Union Free School Dist. 7, Depew, Junior and Senior High School and site imprvs. $2,000,000.

N. Y., New York—HEALTH CENTER—B.A. 4/22—Dpt. P. Wks., Municipal Bldg., Zone 7, general constr., plumbing, heating and ventilating, electrical work and lighting fixtures for constr. of Morrisania Health Center, west side of Fulton Ave. between E. 169 and E. 170 Sts., Bronx Boro. Plans deposit $50. Extended date. CD 4/2.

N. J., Pompton Plains—SCHOOL—B.A. 4/23—Bd. Educ., Pequannock Twp., Pompton Plains, Pequannock Valley School. $500,000. CD 1/7/46, under N. J., Pequannock.

N. Y., Brooklyn—HOSPITAL—B.A. 4/29—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, general constr., plumbing, heating and ventilating, electrical work and lighting for constr. of Coney Island New General Hospital, Ocean Parkway, Avenue Z and E. 6th St., Brooklyn Boro. Plans deposit $100. Extended date. CD 3/5.

N. Y., New York—COURT HOUSE—B.A. 5/6—Dpt. P. Wks., Municipal Bldg., Zone 7, general constr., plumbing, heating and ventilating, electrical work and lighting fixtures for constr. of addns. and alterations to the Appellate Division Court Building, Madison Ave. and E. 25 St., Manhattan Boro. Plans deposit $50. CD 7/16.

▲ **N. Y., New York**—POWER PLANT B.A. 5/7—Bd. Transportation, 370 Jay St., Brooklyn, Zone 1, general constr.; heating, ventilating and air conditioning; plumbing for general superstructure for 74th Street Power Plant, Manhattan Boro. $4,000,000-$5,000,000.

Pa., Phila.—PLANT and OFFICE—Bids Asked—Frigidaire Div. General Motors Corp., 300 Taylor Ave., Dayton, O. distribution plant and office. $750,000.

Pa., Phila.—PARKING GARAGE—Bids Asked—At office Charles E. Oelschlager, archt., 20 S. 39th St., off street parking garage for Herman Fisch, 3721 N. 8 St., Phila., Pa. $750,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Lehigh Structural Steel Co., 17 Battery Pl., New York 4, N. Y., CA. $475,185, welded design, furnishing and erecting steel for Hangar No. 7, Contr. NYA-290.002, IDLEWILD, N. Y. Port of New York Auth., 111 8th Ave. New York, 11, N. Y. Bids Mar. 11. CD 3/19, under LB.

NEW JERSEY—State Hy. Dpt., 1035 Parkway Ave., Trenton.

Ole Hansen & Sons, Inc., Old Turnpike and Franklin Ave., Pleasantville, **N. J.** LB $131,748. resurf. eastbound roadway, 3.944 mi. U. S. Rte. 30 (Sect. 12-E) from Hamburg Ave., Egg Harbor City to Union Ave., Elwood, Atlantic Co. Bids Mar. 31. CD 3/16.

▲ **Thompson Constr. Corp.**, 8513 Widener Road, Wyndmoor, Pa., CA, **$1,055,146**, track rehabilitation and new track paving, sidewalks, sewers, CAMDEN, N. J. Pennsylvania-Reading Seashore Lines, J. L. Gressitt, ch. engr., Room 1658, Broad St. Station Bldg., 16 and Pennsylvania Blvd., Phila. 3, Pa. Bids Feb. 12. CD 2/19, under LB.

▲ **Berlanti Constr. Co.**, 15 Oakland Ave., Harrison, N. Y., CA, **$3,477,249**, general contract intercepting sewers, pumping station and treatment plant, WOODBRIDGE, N. J. Woodbridge Twp., Municipal Bldg., Woodbridge, N. J. Bids Jan. 20. (**Correction**—contractors address). CD 3/20, under CA.

† **Wortmann & Sons, Inc.**, 109 E. 29 St., New York, N. Y. LB **$332,165**. A10 Shop, A10 Admin. space, A10 warehouse, heavy equip. yard and open storage paving, Eng-36-109-53-412, McGuire Air Force Base, WRIGHTSTOWN, **N. J. U. S. Eng.**, 12 N. Broad St., Phila. 1, Pa. Bids Mar. 20. CD 2/19.

Marshall Constr. Co., 186 S. 15 St., Harrisburg, Pa. CA. $154,438. est. $140,000, facilities; roads, repairs to dam at Bendigo Park, Glen Hazel, Elk Co., PENNSYLVANIA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids Mar. 11, awarded Mar. 31. CD 3/18, under LB.

▲ **PENNSYLVANIA**—Pennsylvania Turnpike Comn., 11 N. Fourth St., Harrisburg.

C. J. Langenfelder & Son, Inc., Boston and Ponca Sts., Baltimore, Md., LB $5,336,093, structures, grading, drainage, paving 3.26 mi. Sec. 32D, and structures, grading, drainage, paving 2.85 mi. Sec. 32C, both Delaware River Exten., Montgomery Co. Bids Apr. 2. CD 3/12 and 3/10.

Herbert J. Elkins, 7348 Malvern Ave., Phila., Pa., LB **$421,974**. storm water drainage and grading, adjacent to Essington Ave., PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. CD 3/11/46.

† **E. J. Albrecht**, 2626 W. 26 St., Chicago, Ill. CA **$855,695**. local flood protection proj. North Branch Potomac River Industrial Dam, Cumberland, Md. and Ridgeley, W. Va., MARYLAND and WEST VIRGINIA. U. S. Eng., First And Douglas Sts. N. W., Wash. 25, D. C. Bids Mar. 19, awarded Mar. 27. CD 3/27, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Hub Shopping Center**, c/o Morris Lapidus, archt., 256 E. 49 St., New York 17, N. Y. Owner Builds. $5,000,000. SHOPPING CENTER, 29 acre site, Old Country Rd. and South Oyster Bay Rd., HICKSVILLE, N. Y.

▲ **Jamaica Estates North Homes**, c/o Benjamin R. Levinson, archt., 168-25 Hillside Ave., Jamaica, N. Y. Owner Builds. $2,000,000. 105 HOUSES, 171 St. and 73 Ave., JAMAICA, N. Y.

College Garden Apartments, c/o Seelig & Finkelstein, archts., 153 Pierrepont St., Brooklyn 2, N. Y. Owner Builds. $900,000. two APARTMENTS for 120 families, E. 211 St. and Kings College Pl., NEW YORK, N. Y. CD 10/4/51.

▲ **Beach-Way Estates Homes**, c/o Alwin Cassens, Jr., archt., 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. $1,300,000. 50 HOUSES, Beachway and North Plandome Rd., PORT WASHINGTON, N. Y.

▲ **Lowe & Sons**, 243 State St., Schenectady, N. Y. CA. Approx. $1,000,000. 1 and 2 story, 72x172 ft., 69x84 ft. brick, concrete, T-shaped INDUSTRIAL CLINIC bldg., SCHENECTADY, N. Y. General Electric Co., 1 River Rd., Schenectady, N. Y. Bids Feb. 4, awarded Mar. 1. CD 1/14.

▲ **Felix Clauss & Sons**, Richmond St. and Wheatsheaf Lane, Phila., Pa., CA. $4,500,000. 250 RESIDENCES, Abington Twp., Huntington Valley Sect., ABINGTON, PA. Tioga Realty Co., 1642 W. Erie Ave., Phila., Pa.

Garland Constr. Co., 6730 Old York Rd., Phila., Pa. Separate Contracts. $850,000. RESIDENTIAL development, Brentwood Rd., ABINGTON, PA.

▲ **H. B. Alexander & Son**, 315 Vaughn St., Harrisburg, Pa., LB $2,641,303, SENIOR HIGH SCHOOL, athletic field and greenhouse, CHAMBERSBURG, PA. Chambersburg Area Joint School Bd., Chambersburg, Pa. Bids Mar. 19. CD 3/13.

K. B. Shihadeh, Honeybrook, Pa., Separate Contracts. $600,000. RESIDENTIAL DEVELOPMENT, Olive St., etc. COATESVILLE, PA.

Associated Contractors, Conneaut Lake, Pa., LB $622,916, general constr., Junior-Senior HIGH SCHOOL for Conneaut Lake Area Joint School Dist., CONNEAUT LAKE, PA. State Public School Bldg. Auth., 25 and Market Sts., Harrisburg, Pa. Kling & Frost, 661 Wick Ave., Youngstown, O., archts. Bids Apr. 2. CD 6/15/51.

▲ **Alan Wood Steel Co., Conshohocken, Pa.**, Separate Contracts, $2,750,000. STEEL MILL addns., alterations, CONSHOHOCKEN, PA.

▲ **B. Bornstein & Son, 2027 Arch St., Phila., Pa.**, CA $1,481,000, Junior Senior HIGH SCHOOL, CORN-

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

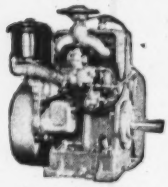
†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

Power TO FIT THE JOB

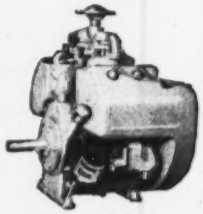
Power TO FIT THE MACHINE

WISCONSIN-POWERED "Hydra-Hammer"

4-cycle single cyl., 3 to 9 hp.



4-cycle 2-cylinder, 7 to 14½ hp.



V-type 4-cylinder, 15 to 36 hp.

Among the many unique and effective applications of Wisconsin Heavy-Duty Air-Cooled Engine Power is this one-man Ottawa "Hydra-Hammer" . . . shown here tamping backfill around manhole covers on a new sewer line on the outskirts of Kansas City, Mo. This equipment is made by Ottawa Steel Products, Inc., Ottawa, Kansas. The Hydra-Hammer can be used for concrete breaking, tamping and back-filling or asphalt cutting . . . with a dependable Wisconsin Air-Cooled Engine doing the heavy work. The tower tilts forward, backward, right or left a full 15 degrees to permit close in, hard to get to breaking or tamping and the 460 lb. hammer breaks concrete up to 9" thick.

In construction service everywhere Wisconsin Air-Cooled Engines are more and more getting the nod as the most satisfactory and foolproof power to fit both the *job* and the *machine*. There is a type and size for every requirement in a 3 to 36 hp. range . . . 4-cycle single cylinder, 2- and 4-cylinder models.

WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

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Hayward Buckets

Use this Class "E" Clam Shell Bucket for handling crushed stone, gravel, sand and other bulk materials.

THE HAYWARD CO., 48-50 Church St., N. Y.

WELLS HEIGHTS, PA. Bensalem Twp. School Auth., Cornwell Heights, Pa. Bids Feb. 8. CD 3/2, under LB.

Jayson Stover, Hatboro, Pa., Separate Contracts. $350,000. RESIDENTIAL DEVELOPMENT, Maple Ave. and East St., DOYLESTOWN, PA.

Herman Wohlsen's Sons, Griest Bldg., Lancaster, Pa. CA. $500,000. 7 story, 50x100 ft. brick, steel skeleton MFG. BLDG., LANCASTER, PA. Armstrong Cork Co., Liberty and Mary Sts., Lancaster, Pa. Bids Mar. 17. CD 3/24.

Barclay White & Co., 22 N. 36 St., Phila., Pa. CA $300,000. RESEARCH BLDG.; CA $350,000, PLANT BLDG for use as locker and men's bldg., MARCUS HOOK, PA. Sun Oil Co., 1608 Walnut St., Phila., Pa. Bids Oct. 22. CD 10/7.

▲ **Preston Run Corp.**, 31 Rosemary Lane, Media, Pa. Separate Contracts. $1,200,000. RESIDENTIAL DEVELOPMENT, NEWTON SQUARE, PA. George Hay, Lima, Pa., archt.

Samuel Gerson, 3018 W. Berks St., Phila., Pa. Separate Contracts. $350,000. RESIDENTIAL DEVELOPMENT, Levick and Hawthorne Sts., PHILA., PA.

Hojers Bldg. Corp., 6730 York Rd., Phila., Pa. Separate Contracts. $350,000. RESIDENTIAL DEVELOPMENT, Devereaux St., PHILA., PA.

▲ **B. J. Lucarelli & Co.**, 22 Orchard St., Jersey City, N. J., LB $1,858,000. East Poplar low rent HOUSING DEVELOPMENT, 7 and Green Sts., PHILA., PA. Phila. Housing Auth., 42 S. 15 St., Phila., Pa. Bids Mar. 24.

McCloskey & Co., 1620 W. Thompson St., Phila., Pa. LB $994,000, general contract Queen Lane Low Rent HOUSING, PHILA., PA. Phila. Housing Auth., 42 S. 15 St., Phila., Pa. Bids Mar. 19. CD 3/24.

George Shapiro, 2235 Wood St., Phila., Pa., CA. $882,000, RESIDENTIAL DEVELOPMENT, North East Sect., PHILA., PA. Owner, c/o contractor.

Samuel Sukerman, 1841 Nedro Ave., Phila., Pa., Separate Contracts. $308,000, 28 RESIDENCES, Burgess St., PHILA., PA.

▲ **Stofflet & Tillotson**, 2043 Eastburn Ave., Phila., Pa. LB $3,373,000, Liddenfield HOUSING, PHILA., PA. Phila. Housing Auth., 42 S. 15 St., Phila., Pa. Liddenfield Architects, 138 N. 17 St., Phila., Pa., archts. Bids Mar. 17.

Albert Waskiewicz, 429 Hermitage St., Phila., Pa. Separate Contracts. $300,000. RESIDENTIAL DEVELOPMENT Lawnton St. etc., PHILA., PA. John P. Keil, 621 Gates St., Phila., Pa., archt.

▲ **E. H. Keefer & Son**, 1321 Rodman St., Phila., Pa. CA $1,095,872. General contract HOSPITAL, NURSES HOME addn. and paving, POTTSTOWN, PA. Pottstown Hospital, 724 N. Charlotte St., Pottstown, Pa. CD 2/5, under LB.

▲ **Lansdowne Builders Supply Co.**, Lansdowne, Pa., CA. $1,000,000. RESIDENTIAL DEVELOPMENT, RIDLEY PARK, PA. Owner, c/o contractor.

Secane Homes Co., 225 S. 69 St., Upper Darby, Pa. Separate Contracts. $310,000. 38 RESIDENCES, Secane Rd., SECANE, PA. Erling Wenge, 225 S. 69 St., Upper Darby, Pa., archt.

Benjamin Steinman, Inc., 59 and Ludlow Sts., Phila., Pa., Separate Contracts. $300,000. APARTMENTS and STORES, State Rd. and Rodgers Ave., UPPER DARBY, PA.

Madison Builders, Inc., Newtown Square, Pa., Separate Contracts. $525,000. RESIDENTIAL DEVELOPMENT, Valley Forge Rd., VALLEY FORGE, PA.

▲ **Madison Builders, Inc.**, 3513 W. Chester Pike, Newton Square, Phila., Pa. Separate Contracts. $1,000,000. RESIDENTIAL DEVELOPMENT, Croton Ave. Sect., etc., WAYNE, PA.

Max Chipin, 6301 N. Crittenden St., Phila., Pa. Separate Contracts. $380,000. RESIDENTIAL DEVELOPMENT, Salisbury St., WYNCOTE, PA.

▲ **Binns-Newark Homes**, 2221 Chestnut St., Phila., Pa., Separate Contracts. $1,360,000. RESIDENTIAL DEVELOPMENT, Elkton Rd., NEWARK, DEL.

Rupert Constr. Co., 3400 Lancaster Ave., Wilmington, Del. CA $317,000. Medill SCHOOL addn., NEWARK, DEL. Newark Special School Dist., Newark, Del. Bids Mar. 18. CD 3/12.

▲† **Mahony-Troast Constr. Co.**, 1500 Walnut St., Phila., Pa. CA $1,600,000. equipping PLANT, railroad track, etc., NEWARK, DEL. Chrysler Corp., Delaware Tank Plant, Newark, Del. Bids Mar. 23. CD 3/12.

Magness & Stabb Constr. Co., Bellefonte, Del., Separate Contracts, $500,000, RESIDENTIAL DEVELOPMENT, Swanwyck Area, WILMINGTON, DEL.

Joseph F. Nebel Constr. Co., 2140 P St., N.W., Wash., D. C., CA. $362,259, one 4 story stone brick, concrete BANK and office, 1337 Connecticut Ave., N.W., WASH., D. C. Hamilton National Bank, 619 14 St. N.W., Wash., D. C. Awarded Mar. 31. CD 12/17.

Victor Carone, 222 Rosemary St., Chevy Chase, Md., Owner Builds, $400,000 one 3 story, brick, cinder block 58-unit APARTMENT, 4540 MacArthur Blvd. N.W., WASH., D. C. Edwin Weihe, 927 15 St. N.W., Wash., D. C., archt.

SOUTH

BIDS ASKED—BUILDINGS

Va., Norfolk — WELFARE CENTER HOSPITAL — B.A. 4/28—City, City Hall, 1 story, rein-con. brick, concrete masonry Welfare Center Hospital. $750,000. Plans deposit $50. John A. Simpson, McKevitt Bldg., archt. CD 7/21/52.

BIDS ASKED—BUILDINGS

▲ **Va., Chincoteague**—HOUSING—P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, soon lets contract, construct, manage, finance, 307 housing units,

Continued on page 123)

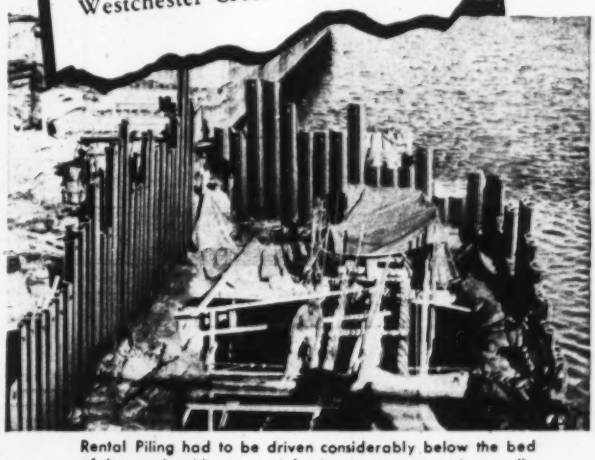
"The BIG SAVING was FOSTER RENTAL PILING"

On complicated 3-sided cofferdam for the $5 million East Bronx Unionport Bridge Construction.

Says John Ury, Project Manager for Contractors:

WM. M. MOORE BUILDING CORP.
and
LOPIER CONSTRUCTION CORP.
75 West 190th Street
Bronx, New York

Construction started in 1949, and skillful driving of 30 to 45 ft. Interlocking Steel Sheet Piling by these 2 contractors made this an economical, successful job. Unionport Bridge crosses Westchester Creek in East Bronx.



Rental Piling had to be driven considerably below the bed of the creek, with extra reinforcing to protect against swells.

An interesting installation of piers had to be constructed atop 35-year old existing caissons. Here was a tough water seepage problem in a complicated 3-sided cofferdam — approximately 1,000 gpm had to be pumped out of the cofferdam by two 6-inch pumps. Steel Sheet piling was needed — on time — in the exact section and lengths (30 to 45 feet). And Foster had it — just what the job required. A phoned order — a prompt delivery, a dependable quality — and a low cost, requiring no huge purchase investment on the part of the contractor, made FOSTER RENTAL PILING the 100% answer for this job.

Let us quote you on our low-cost Piling Rentals —prompt service from 5 Foster warehouses. Free Piling Brochure illustrating diagrams of all standard makes of piling sections is available.

Send for Bulletin EP-4.

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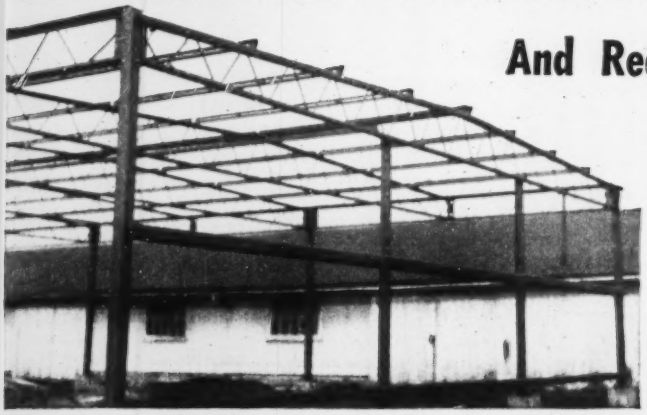
Frame A Modern School

Build An Industrial Plant



And Reduce Framing Costs of an Industrial Garage

V-LOK—the interlocking structural system made in standard bay sizes—is spelling out ECONOMY in many ways.

V-LOK will get a building up and under roof faster than any other type of steel construction.

These structural members design readily into standard school room dimensions, factory buildings, supermarkets, ranch type houses. Write for catalog.

STANDARDIZED STEEL BUILDING PRODUCTS

MACOMBER • INCORPORATED

CANTON, OHIO

V BAR JOISTS • LONGSPANS • BOWSTRING TRUSSES • STEEL DECK

(Continued from page 120)

utilities, site imprvs. $2,200,000. Sturgeon, Clark & Buhr, Midtown Bldg., Wards Corner, Norfolk, engs.-archts. CD 7/23/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **WEST VIRGINIA**—West Virginia Turnpike Comm. 1340 Wilson St., Charleston, Zone 1.

Latrobe Constr. Co., Latrobe, Pa., CA, $1,732,693 grading, paving 4.3 mi. hy. between Piney Creek and Little Whitestick Creek, Realiegh Co. CD 3/31, under LB.

Nance & Vivadelli, 2420 Wilson Blvd., Arlington, Va. LB, $681,000, interceptor sewers, W. side Elk River, Kanawha Blvd. to Mary St., E. side Elk River, Virginia to Spring Sts.;

Mountain State Constr. Co., 5111½ MacCorkle Ave. S., Charleston, W. Va., LB, $216,045, enclosed sewer Porter Hollow from Hale Hollow, CHARLESTON, W. Va. Charleston Sanitary Bd., City Hall, Charleston, W. Va. Bids Apr. 4. CD 3/27.

† **Duval Engr. & Contg. Co.**, 1746 E. Adams St., Jacksonville, Fla., LB, $591,048, roads, streets sanitary sewerage, domestic water, storm drainage and elec. distr. U. S. Naval Auxiliary Air Station, Glynco, NOY 72975, Spec. 34108, BRUNSWICK, GA. Dpt. Navy, Officer in Charge of Construction, Box 465 Naval Base, S. C. Bids Apr. 2. CD 3/4.

▲ **FLORIDA**—State Road Dpt., Tallahassee,

W. L. Cobb Constr. Co., 1102 N. 22 St., Tampa, Fla., LB, $66,440, grading, paving, Road S-767, S. P. Job No. 1254-151, Lee Co.;

H. E. Wolfe Constr. Co., St. Augustine, Fla., LB, $273,609, paving, storm sewers, etc. Road 828, S. P. Job No. 8708-150, Dade Co.;

Smith Eng. & Constr. Co., W. Pensacola St., Pensacola, Fla., LB, $59,758, grading, paving, etc. 2/3 mi. Road S-4, S. P. Job No. 57e2-150, Okaloosa Co.;

L. L. Hall Constr. Co., Orange Park, Fla., LB $95,155, grading, paving Road S-224-A, S. P. Job No. 7154-150, Clay Co.;

Jas. H. Craggs Constr. Co., Gainesville, Fla., LB, $117,724, paving, storm sewers, streets in Ortega Terrace S. P. Job No. 7250-153, Duval Co.;

R. H. Strickland, Quincy, Fla., LB, $83,284, grading, paving, 210 ft. concrete slab bridge on timber piling, State Rd. S-274, F.A.P. S-350 (1), State Job 5055-250, Gadsden Co.;

Faulk & Coleman Constr. Co., 4 Pts. Woodville Hy., Tallahassee, Fla., LB, $82,759, grading, draining, paving, 1 concrete box culvert of bridge length State Rd. S-1622, F.A.P. S-360 (1) and S-361 (1), Jobs 5353-250 and 5353-251, Jackson Co.;

Finley P. Smith, Ft. Lauderdale, Fla., LB, $105,863, grading, stabilizing, paving, State Rd. S-865, F.A.P. S-364 (1), Job 1253-250, Lee Co.;

C. T. Stockton, Inc., 660 N. W. 54 St., Miami, Fla., LB $725,238, grading, stabilizing, draining, paving, wid'n. 2 bridges, State Rd. 9, F.A.P. UI-026-1 (9) Job 8724-250 and State Job 8724-150, Dade Co.;

Jaxon Constr. Co., 905 Baker Ave., Jacksonville, Fla., LB, $146,418, grading, paving Roads S-661 and S-760, S. P. Job 0542-150, De Soto Co. Bids Mar. 31. CD 3/18.

MISSISSIPPI—State Hy. Dpt., . C. Robbins, dir., Jackson,

Wells & Holiman, 524 Mitchell Ave., Jackson, Miss. CA $216,387. grading, drainage, culverts 6.9 mi. Mississippi Hy. 3 between Crenshaw and Savage Panola, Tate and Tunica Counties. Bids Mar. 24. CD 3/12.

▲ **River Constr. Corp.**, Dan Waggoner Bldg., Fort Worth, Tex. CA $578,000. 22 mi. 18 in. crude oil trunk line from Louisiana-Texas border (between Marshall, Tex. and Shreveport, La.) to site of Finney Pump Station and Caddo Parish; CA $845,000. 28 mi. 22 in. crude oil trunk line from Finney Station site south and east to near Coushatta in Red River Parish, Finney, LOUISIANA AND TEXAS. Interstate Oil Pipe Line Co., Standard Oil Bldg., Shreveport, La.

▲ † **R. P. Farnsworth Co.**, 1515 S. Salcedo St., New Orleans, La., LB $1,484,000, rein.-con. maintenance and operation hangar, Naval Air Station, NOY 71563, MEMPHIS, TENN. Dpt. Navy, Officer in Charge of Construction, Naval Base, Charleston, S. C. Bids Apr. 1. CD 3/17.

BUILDINGS

LOW BIDS AND CONTRACTS

Richard Kirsten, Richmar Constr. Co., 2215 9th St., N.W. Wash., D. C., Owner Builds. Approx. $685,000. 38 one-story brick, concrete masonry RESIDENCES, ALEXANDRIA, VA. CD 3/24.

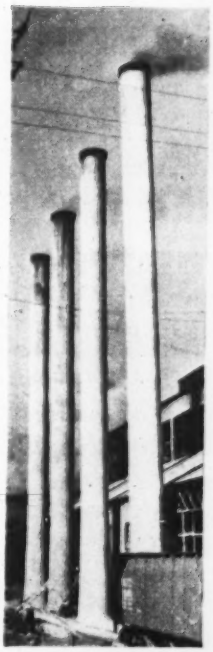
Kahn Engr. Co., Inc., 427 "O" St., S. W., Wash., D. C. LB $683,825. Minnie Howard SCHOOL, ALEXANDRIA, VA. Alexandria Bd. Educ., 208 N. Columbus St., Alexandria, Va. Bids Apr. 1. CD 3/13.

▲ **Larrymore Acres Homes**, c/o Matern & York, archts., 90-04 161 St., Jamaica, N. Y. Owner Builds. $3 000,000. 300 HOUSES on 85-acre tract, Little Creek Rd., NORFOLK, VA.

G. S. Realty Corp., (Silvey Bldg. Corp.), 5310 E. Princess Anne Rd., Norfolk, Va. Owner Builds. Approx. $850,000. 101 add. HOUSES, in River Oaks Development, NORFOLK, VA. CD 9/8.

Hargett Constr. Co., 113 Walton Ave., Lexington, Ky. LB $653,982. six 2 story, 43x136 ft., brick veneer fraternity HOUSES University of Kentucky, LEXINGTON, KY. State, State Office Bldg., Frankfort, Ky. Brock & Johnson, 114 Barr St., Lexington, Ky., archts. Bids Apr. 2. CD 10/2/51.

D. R. Selley, 409 4 Ave. S., Nashville, Tenn. LB $326,000. brick veneer elementary SCHOOL, Loves, MAYFIELD, KY. Graves Co., Bd. Educ., Mayfield, Ky. Bids Mar. 26. CD 3/12.



Monolithic Stacks Built with "GUNITE"

SINCE 1924, we have built more than 200 self-supporting "GUNITE" stacks for steel mills and other industrial plants.

In building the four stacks shown at the left, the old deteriorated steel stacks were used as forms. They were not taken out of service during construction. Plywood forms are used for new construction and for extending the height of existing stacks.

The cost of building or rebuilding stacks with "GUNITE" is surprisingly low. The seamless, nonporous, monolithic nature of "GUNITE" stacks gives them a life expectancy considerably greater than stacks of steel or reinforced concrete. Many "GUNITE" stacks, in service for more than 20 years, are still in good shape, without maintenance of any type.

Details of stack construction and many other advantageous applications of "GUNITE" are pictured and described in Bulletin A 2400. A request on your letterhead will bring you a free copy.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA. U.S.A.
MANUFACTURERS OF THE CEMENT GUN

REQUIRE
NO CURRENT

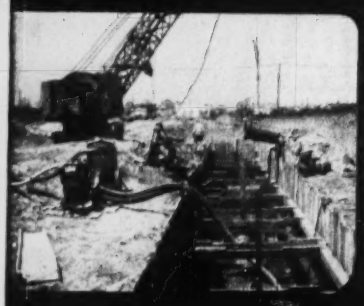
INDOOR AND OUTDOOR MODELS

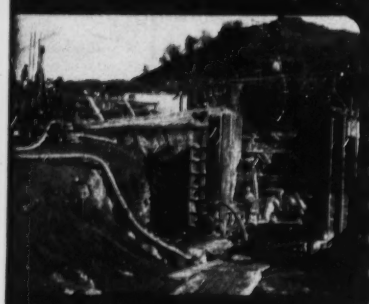
For permanent installation on projects or temporary use on construction jobs. Insure positive communication at all times even in emergencies because no batteries or other current is required. Minimum upkeep. Selective or common ringing and semi-selective or common talking.

WRITE FOR ILLUSTRATED CATALOG

HOSE-McCANN TELEPHONE CO., INC.
761 THIRD AVENUE, BROOKLYN 32, N.Y.
TELEPHONE HYacinth 9-1200

PUMP RENTAL is a 'RUGGED BUSINESS'





. . . and **MARLOWS** *are designed to deliver dependable performance under the toughest conditions!*

The Biggest Pump Rental Fleet in Baltimore is 100% Marlow.

D. C. Harrison, President, General Supply and Equipment Co., Baltimore, Md. says:

"Our company maintains the biggest pump rental fleet in this area, and every one is a Marlow. When we rent out a Marlow we're sure it will stay on the job. Marlow design enables us to keep the entire fleet in new pump condition at minimum cost."

Here is another typical example that proves Marlow pumps are the best for long, hard use under the most rugged operating conditions. It is a clear indication of the consistent performance of Marlow Self-Priming Centrifugal Pumps . . . their dependability on a wide range of tough assignments.

Check these features and see why we continue to say . . . "Marlows are the best by design, performance, efficiency and trouble-free operation — the best contractors' pumps ever built."

- **Prime faster on higher suction lifts**
- **Pump more water per gallon of fuel**
- **Operate at easier engine speeds**
- **Non-clogging construction handles dirtier water for longer periods**
- **Inexpensive replaceable impeller and diffuser restores pump to original efficiency**
- **Models in all AGC ratings: 4M through 125M, 1½"-10" —plus a large selection of other models for special use**

With men who have to be right **when it comes to specifying the best pump, for the tough jobs, Marlow is always the answer.**

Pump Distributors and Contractors in every section of the country are using Marlows as standard job equipment.

• Write for descriptive literature today. See for yourself what Marlows mean to you in low cost pump operation •

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MARLOW PUMPS RIDGEWOOD, NEW JERSEY

Branch Plant: De Queen, Arkansas

Other factories in France and England. Distributors and Dealers everywhere.

Thorp Constr. Co., Box 22, Evansville, Ind. LB **$897,500.** DORMITORIES, OWENSBORO, KY. Kentucky Wesleyan College, Owensboro, Ky. Bids Mar. 17. CD 3/2.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Mich., Kinross**—AIRFIELD PAVING—B.A. 4/21—U. S. Eng., 1900 Cadillac Tower, Detroit, Zone 26, reseal airfield paving joints, related work, Kinross Air Force Auxiliary Field, Eng.-20-064-53-52. CD 8/29/51, under Mich., Sait Ste Marie.

† **Michigan**—B.A. 4/24—U. S. Eng., 1900 Cadillac Tower, Detroit, dredging materials from Middle Neebish Channel above swept depth of 21 ft. below water datum course 5, St. Mary's River, Eng. 20-064-53-56. CD 6/9/44.

Mich., East Grand Rapids—B.A. 4/27—City, Louis F. Battjes, clk., 750 Lakeside Dr., concrete intake well, water intake piping. Plans deposit $25, refundable, Hamilton, Weeber & Ward, 356 Houseman Bldg., Grand Rapids, engrs.

Mich., Vassar—B.A. 4/27—City, Walter J. Lee, mayor, sewage disposal plant, bldg. 28x30 ft., 2 primary tanks, 1 finishing settling tank, trickling filter, sludge digestion tank 35 ft. diam. 25 ft. deep, sludge drying beds, road and fencing. Plans deposit $25, refundable, Francis Eng. Co., Eddy Bldg., Saginaw, engr. CD 2/8/52.

▲ **Ind., Fort Wayne**—B.A. 5/14—Bd. P. Wks., City Hall, 144 ft. long, 70 ft. wide, Three Rivers Filtration Plant addn. on east side. $3,000,000-$3,500,000. Drury, McNamee Porter, Ann Arbor, Mich. engrs. CD 2/4/49.

BIDS ASKED—BUILDINGS

▲ **Ill., Charleston**—SCHOOL—B.A. 4/22—School District No. 1, Charleston 1 and 2 story, steel, brick high school. $1,300,000. Berger Kelley & Samuelson, Main St., Champaign, Ill., archts. CD 7/27/45.

Ill., Elgin—SCHOOL—B.A. 4/27—Elgin Bd. Educ. 353 E. Chicago Ave., Oak Hill Grade School Elmer Gyltick, 191 S. Grove St., archt. R. J. Stromberg, 117 S. Grove St., assoc. archt. CD 5/28/52.

† **O., Dayton**—HEATING PLANT—B.A. 4/28—U. S. Eng., 830 W. Broadway, Louisville 3, Ky., heating plant addn., Gentile Air Force Depot. $500,000. CD 10/30.

Ind., Michigan City—SCHOOL—B.A. 4/28—Bd. Educ., Michigan City, Eastport Elementary School Michigan St. and Cleveland Ave. $675,000 Boyd E. Phelps, Inc., 1000 Washington St., Michigan City archt. CD 3/11.

Wis., Chippewa Falls—FOOD SERVICE—B.A. 5/1—State Dpt. P. Welfare, Madison, 2 story, 135x270 ft. food service bldg. $750,000. R. C. Kirchoff, Madison, state archt. CD 7/18/52.

SOON LETS CONTRACT—BUILDINGS

Ill., Chicago—HOTEL—Congress Hotel, Michigan Blvd. and Congress St., soon lets contract, reconstr. hotel frontage of 11 story. $300,000. Holabird & Root & Burgee, 180 N. Wabash St., Zone 1, archts.

Ill., Chicago—SCHOOL—St. Benedicts Church, 2215 Irving Park Rd., soon lets contract 2 story bsmt., 107x195 ft., school—gymnasium. $600,000. Gaul & Voosen, 228 E. Superior St., Zone 11, archts. CD 1/15.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—Ohio Turnpike Comn., 361 E. Broad St., Columbus,

George Vang, Inc., Grant Bldg., Pittsburgh, Pa., CA $1,838,755, Proj. C 38, Sandusky River Bridge, Sandusky Co. Bids Mar. 18. CD 3/24, under LB.

▲ **OHIO**—Ohio Turnpike Comn., 361 E. Broad St., Columbus,

Bates & Rogers Constr. Corp., 600 W. Jackson St., Chicago, Ill., CA. $1,772,654, Huron River Bridge, Erie Co. Bids Mar. 25. CD 2/26.

Arcole Midwest Corp., 3225 Main St., Evanston, Ill., LB, $772,898, runway and necessary work, O'Hare Field, CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Mar. 26.

J. T. Poupore Co., Box 3288, Jefferson Station, Detroit, Mich. LB. $135,533. constr., alterations of water and sewerage sys. on John C. Lodge Expressway, BUI 82-137 C76, Detroit, MICHIGAN. State Hy. Dpt., 222 Townsend St., Lansing, 13, Mich. Bids Apr. 1. CD 3/17.

▲ **MICHIGAN**—State Hy. Dpt., 222 Townsend St., Lansing, Zone 13,

C. A. Hull, Dryden, Mich. LB. $148,999. bridge crossing Swan Creek on Detroit-Toledo Expressway in Newport, M B 5 of 58-3-23 C1, Monroe Co.; LB. $134,436. bridge carrying Stony Creek on Detroit-Toledo Expressway, M B2 of 58-7-26 C1, Monroe Co.;

G. L. Towns, Ludington, Mich. LB. $69,559. bridge on county road over Pere Marquette River, CS B1 of 53-3-23 C1, Mason Co.;

Jos. Plozai, Inc., 4329 Central St., Detroit, Mich. LB. $189,733. bridge carrying Detroit-Toledo Expressway over Huron River Drive, M B1 of 82-1-23 C1, Wayne Co.;

W. J. Storen Co., 2411 14 St., Detroit, Mich. LB. $436,258. bridge carrying Trumbull Ave. over Edsel Ford Expressway, BUI B38 of 82-22-10.C1, Wayne Co.; LB. $87,565. widen bridge carrying US-24 over Rouge River, B F1 of 63-20 C C4-R, Oakland Co. Bids Apr. 1. CD 3/17 and 3/25.

Kenny Constr. Co., Skokie, Ill. CA. $784,000. PW-1432, 1,320 ft. double barreled Conant-Mount Elliott Relief Sewer, 10 ft. wide and 10.5 high ID regulating and

diversion dam, chamber Leib St. and exten to Detroit River, DETROIT, MICH. City, Carl D. Warner, comr. Dpt. P. Wks., Guardian Bldg., Detroit, Mich. Bids Mar. 17. CD 2/12.

Worthington Pump & Machinery Corp., 401 Worthington Ave., Harrison, N. J. CA. $710,000. PW 1071-AX 4 addnl. motor driven pumps, accessories, incl. 10 flow meters, service piping etc., Freud Pumping Station, DETROIT, MICH. City, Carl D. Warner, comr. P. Wks., Guardian Bldg., Detroit, Mich. Bids Mar. 17. CD 2/16.

Lord-Burnham Co., Irvington, N. Y. CA. $291,800. restoration glass dome on horticultural Conservatory, Belle Isle, DETROIT, MICH. City, Dpt. Parks & Recreation, 1214 Griswold St., Detroit, Mich. CD 4/14.

BUILDINGS

LOW BIDS AND CONTRACTS

Frank Messer & Sons, Inc., Paddock Rd., Cincinnati, O., CA. Approx. $500,000. 120x350 ft. structural steel WAREHOUSE and OFFICE quarters, Reading Rd. (U.S. 25) SHARONVILLE, O. Solar Steel Corp., 2225 Bogen St., Cincinnati, O. Awarded Mar. 30. CD 10/21/52.

▲ **Miller-Davis Co.**, 1029 Portage St., Kalamazoo, Mich., CA. Approx. $1,500,000, design and construct, 222x290 ft. FACTORY to mfg. paper milk containers, 3847 Crum Rd., Austintown Twp., YOUNGSTOWN, O. International Paper Co., 220 E. 42 St., New York 17, N. Y.

† **Repp & Mundt**, 1604 Cottage Ave., Columbus, Ind. LB $486,042. two 40,000 sq. ft. WAREHOUSES, permanent STORAGE BLDG., addns. to existing bldgs., SALVAGE WAREHOUSE, Jefferson Proving Grounds, MADISON, IND. U. S. Eng., 830 W. Broadway, Louisville 3, Ky. Bids Mar. 31. CD 3/11.

Federal Constructors, 173 W. Madison St., Chicago, 3, Ill., CA, $400,000, meat PACKING PLANT, CHICAGO, ILL. Stockyards Packing Co., 340 N. Oakley St., Chicago, Ill. Awarded Mar. 17. CD 3/23.

Gawley Constr. Co., 7043 S. Kedzie St., Chicago, Ill., LB $702,761, grade school, 8010 S. Kostner St., CHICAGO, ILL. Bd. Educ., 228 N. LaSalle St., Chicago, 1, Ill. Bids Mar. 27. CD 3/25.

Harvey A. Hanson, 1851 Elston Ave., Chicago, Ill. CA, $731,854. Grant Grade School, 2433 W. Wilcox Ave., CHICAGO, ILL. Bd. Educ., 228 N. La Salle St., Chicago, Ill. Bids Mar. 6, awarded Mar. 25. CD 3/24, under LB.

▲ **Kadin Constr. Co.**, 743 Irving Park Rd., Chicago, Ill., CA, $1,500,000, 15 story, 45-unit APARTMENT, Irving Park Rd. and Frontier St., CHICAGO, ILL. Owner, c/o contractor. Rich & Friedman, 6741 Sheridan Rd., Chicago, Ill., archts. Awarded Mar. 25. CD 7/14/49.

Sherman Olson Co., 219 N. Kilpatrick St., Chicago, Ill., CA, $250,000, first unit chemical PLANT, LAKE ZURICH, ILL. Dearborn Chemical Co., 222 W. N. Bank Dr., Chicago, 54, Ill. Awarded Mar. 30. CD 7/10.

Otto A. Schulz Constr. Co., 3114 Harrison St. Evanston, Ill., LB, $784,758, Junior High SCHOOL, Lincoln and Cross Sts., WHEATON, ILL. School District 36, 504 Naperville Rd., Wheaton, Ill. Bids Mar. 17. CD 2/25.

Zenoff Realty Co., 229 E. Wisconsin Ave., Milwaukee, 2, Wis. Owner Builds. $700,000. 66 RESIDENCES, ST. FRANCIS, WIS.

Steenburg Constr. Co., 1371 Marshall Ave., St. Paul, Minn., CA. $971,962, general contract, COURT HOUSE, WAUSAU, WIS. Marathon Co., Court House, Wausau, Wis. Bids Mar. 24, awarded Mar. 31. CD 3/31.

▲ **Kooman & Hassin**, 19751 James Couzens Dr., Detroit, Mich. Owner Builds. $1,000,000. 100 HOMES, Coolidge and Oak Park Blvd., OAK PARK, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Wyoming**—OIL PURIFIER—B.A. 5/7—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Casper, portable oil purifier, drying oven for Alcova Power Plant, Kendrick Proj., Inv. DS 3927, L. N. McClellan, ch. engr. CD 9/12/44, under Earthwork, etc.

BIDS ASKED—BUILDINGS

Minn., Cottonwood—SCHOOL—B.A. 4/21—Bd. Educ., school addn. $300,000. Plans deposit $20, E. H. Schmidt & Co., Mankato, archts.

Mo., Cape Girardeau—SCHOOL—B.A. 4/21—At office A.F. and Arthur Stauder, archts. 3608 S. Grand Blvd., St. Louis, Zone 18, 2 story, ground floor, 61 x 147 ft., 101 x 144 ft., brick, steel, stone, glass blocks high school on 15 acre tract, for Greater Cape Girardeau High School, c/o Rev. Marion F. Forst, pastor, St. Mary's Parish and Rev. Joseph P. Dyra, CM pastor St. Vincent's Parish, Cape Girardeau, Mo. $700,000 CD 2/10.

Minn., Monticello—SCHOOL—B.A. 4/28—Bd. Educ., W. A. Sandberg, clk., 1 story high school, $400,000, Haarstick & Lundgren, W. 1385 First National Bank Bldg., St. Paul, archts. CD 12/18/52.

Tex., Deer Park—SCHOOL—B.A. 4/30—Deer Park Independent School Dist., c/o Clyde Abshier, supt, Ivy St., Houston, Deep Water Elementary School. $600,000. Plans deposit $60. Emory S. White, M & M Bldg., Houston, archt. Walter P. Moore, 2 Pinedale St., and Howard & Johnson, 4926 Travis St., Houston, engrs. CD 7/16/52.

Tex., Houston — GARAGE — B.A. 4/30 — South Texas National Bank, 213 Main St., parking garage across street from bank and office proposed bldg. and con-

(Continued on page 129)

pump rental is a "RUGGED BUSINESS"

. . . and **MARLOWS** *are built to stand the gaff!*

Here is what Harvey Reeves, of the Foundation Equipment Co., Long Island City, N. Y. has to say . . .

"We operate the largest pump rental fleets in New York and Chicago . . . and both fleets are 100% Marlows. Marlow pumps maintain new pump performance longer and can be put back into new pump condition at less cost. They are the best contractors pumps built today."

Yes . . . pump rental is the toughest kind of service. If MARLOWS are best for rental they *must* be good. Day in and day out, MARLOW Self-Priming Centrifugal Pumps are handling the toughest kind of rental jobs.

In some cases, MARLOW PUMPS — (the preferred pumps for rental fleets) — are sent as far as 500 miles from home warehouses. The pump distributor cannot take any chances of a breakdown that will seriously halt job progress — he has to have the best pump on the job. That's why so many distributors rely on MARLOWS for the rental fleet.

MARLOW Self-Priming Centrifugal Pumps are built to last longer — (cheaper to overhaul) easy to check and service in the field. Practical design assures long engine wear; after long, hard use MARLOWS can be restored to full original efficiency by simply replacing the impeller and diffuser.

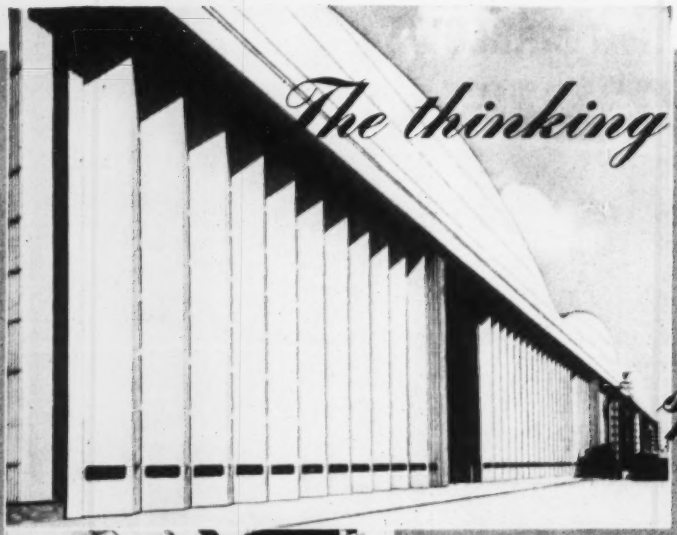
Keep this in mind when you think of pumps...the largest Pump distributors rebuild all kinds of pumps but they limit the rental fleets to MARLOWS. Men who have to be right when it comes to picking the pump for the job *always rely on MARLOWS.*

• *Write today for facts, figures and specifications.*

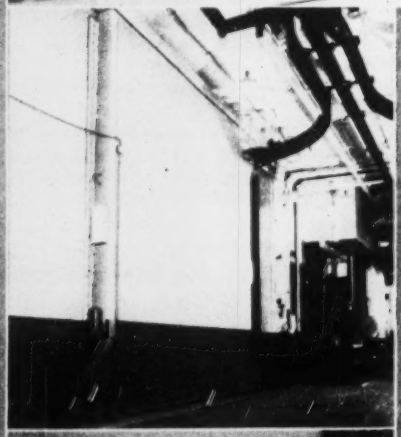
101

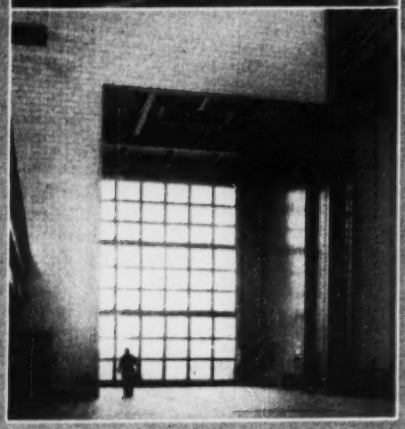
MARLOW PUMPS RIDGEWOOD, NEW JERSEY
Branch Plant De Queen, Arkansas
Other factories in France and England Distributors and Dealers everywhere

PEELLE-RICHMOND



The thinking and experience that produced these special purpose doors





Peelle-Esavian Door - BRISTOL AEROPLANE ASSEMBLY PLANT—Filton, England -

The front of this huge, three-bay hangar presents a continuous opening of 1045' in width and 65' 9" in height. To close this opening it was necessary to build one of the largest doors in the world, consisting of 3 pairs of sliding-folding aluminum-covered sections. Motive power is housed in the power mullions at each leading edge of the door structure.

The Peelle-Esavian Door is based on an entirely new principle which eliminates the necessity for expensive structural features in the building. The entire weight of the door is carried on the bottom track and the motivating power is on the door. This door offers many unique advantages, particularly for large openings of unusual height.

Write for new Peelle-Esavian Brochure.

Jet Engine Test Cell Door - PRATT & WHITNEY AIRCRAFT, East Hartford, Conn
Albert Kahn Associated Architects & Engineers - Builders: Turner Construction Company

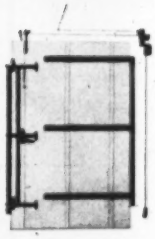
To contain and deaden the roar of jet engines on test, Pratt & Whitney Aircraft had The Peelle Company design and build ten of these huge concrete and steel doors for its new jet engine test cell block. Big enough to admit the most powerful engines of today and the even bigger ones to come, these doors had to be built as thick as the walls of the cells themselves to control the enormous volume of sound produced by the engine while running. Constructed in place, these dense concrete doors weigh 45 tons each, yet their electric motor drive travels them horizontally at the rate of 10 feet per minute quite easily. And, from outside the closed door, only a moderate hum can be heard of the earth-shaking roar of the jet engine running inside.

Motorized Door Measuring 24' x 35' - SEWAREN GENERATING STATION
Owners and Engineers: Public Service Electric and Gas Company of New Jersey
Consulting Architects: Walker & Poor - Builders: United Engineers & Constructors, Inc.

This towering stainless steel and glass door was engineered and built by The Peelle Company to carry out the architectural treatment of the building and to satisfy the engineering requirements. Three vertical sliding panels in the door are counter-weighted and are operated by a triple parallel gear head reducing unit with brake. Door panels move at varying speeds to arrive simultaneously at open position.

This is one of many types of motorized doors and partitions designed and built by The Peelle Company for factories, power stations, warehouses, terminals, hangars, mills, garages, hospitals and schools. Peelle Engineered Doors merit consideration in your plans.

Engineered Doors



Richmond Metal Clad Fire Doors - Swing and Slide

Richmond Flush Kalamein Doors

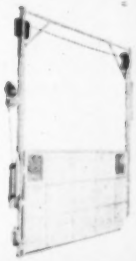
Richmond "MD" Tubular Steel Industrial Doors

Richmond Steel Door Frames

FIRE DOORS Frames and Hardware

Peelle Dumbwaiter Doors

Peelle Counter-Balanced Freight Elevator Doors



Peelle Motorized Solid Panel Car Gates

ELEVATOR DOORS

Peelle Horizontal Sliding Doors

Peelle Vertical Sliding Doors

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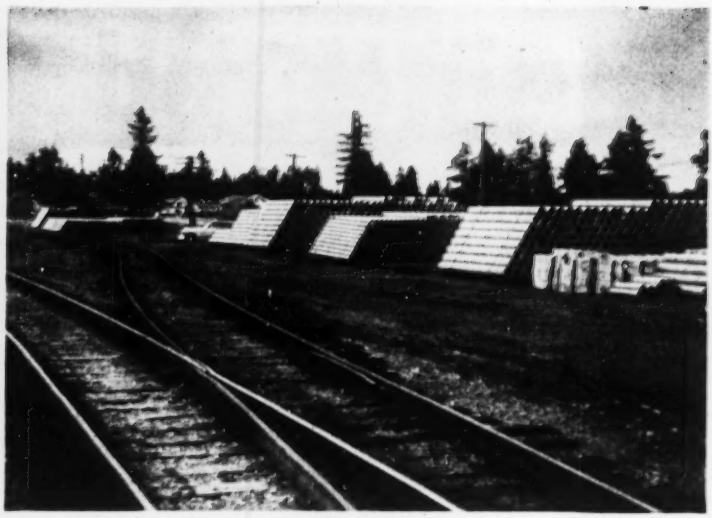
THE RICHMOND FIREPROOF DOOR CO.
RICHMOND, INDIANA

OFFICES IN PRINCIPAL CITIES

MANUFACTURERS OF THE PEELLE MOTORSTAIR

Part of a 13 mile installation of "Century" Asbestos-Cement Pipe, Lakewood Water District, near Tacoma, Washington



Stock of "Century" Asbestos-Cement Pipe

Water carried 13 trouble-free miles through "CENTURY" asbestos-cement pipe

Near Tacoma, Washington, the Lakewood Water District which serves a very fine residential area recently completed a "Century" Asbestos-Cement water main that will please the taxpayers . . . for generations. For this intimately compacted mixture of two practically indestructible materials—asbestos fiber and portland cement—is so economical to install and so trouble-free in operation that today's money-raising problems are solved, and tomorrow's performance promises kept.

From shipment . . . through piling on the job . . . to eventual cutting-in, this light, exceptionally strong pipe, moderate in cost, is easy to handle. With "Century" Simplex Couplings, curves up to 5° deflection per pipe length can be laid as simply as straight runs, flexural strains caused by earth settlement or trench loading are minimized, and special bends held to a minimum. Labor savings all along the line result.

The economy and complete satisfaction that begin with installation continue down through the years with "Century" Asbestos-Cement Pipe. Because it never tuberculates, its smooth inner surface is permanent, assuring continuous flow with minimum pumping costs. Its outer surface is highly resistant to the corrosive effects of any soil.

Whether or not you are presently planning to buy or specify pipe for water mains, learn more about "Century" Asbestos-Cement Pipe.

***Write* for FREE BOOKLET,** "Mains without Maintenance". Gives valuable data, specifications, and reference material for anyone interested in water main pipes.

Nature made Asbestos . . . Keasbey & Mattison has made it serve mankind since 1873

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(Continued from page 125)

nected by underground tunnel. $750,000. Kenneth Franzheim, 2402 Crawford St., archt. Howard, Johnson & Kelley, Scanlan Bldg., Engrs. CD 4/6.

▲ **Tex., Houston**—OFFICE—B.A. 4/30—South Texas National Bank, 213 Main St., 21 story, bsmnt., subbsmnt., 400 000 sq. ft. structural steel frame, brick, terra cotta bank and office, $3,500,000. Kenneth Franzheim, 2402 Crawford St., archt. Howard Johnson & Kelley, Scanlan Bldg., engrs. CD 3/26.

Tex., Alvin—SACK RICE DRYER—Bids Asked—Southern Warehouse Corp., 1410 Clinton Dr., Houston, 44x172 ft. steel sack rice dryer structure, rein.-con. drilled and square fdn. footings, etc. E. L. Shult, 5009 Fannin St., Houston, archt. Walter P. Moore 2 Pinedale St., Houston, engr.

▲ **Tex., Austin**—HOSPITAL—Bids Asked—St. Davids Community Hospital, Robert R. Lloyd, administrator, 606 W. 17 St., 100-bed hospital, $2,180,000. Page, Southerland & Page, 602 West Ave, Austin, archts. CD 9/24.

▲ **Tex., Big Spring**—REFINERY—Bids Asked—Cosden Petroleum Corp., Big Spring, refinery expansion. $3,000,000. CD 3/12.

Tex., Houston—PARKING GARAGE—Bids Asked—South Texas National Bank, 213 Main St., parking garage across street from bank and office proposed bldg. and connected by underground tunnel. $750,000. Kenneth Franzheim, 2402 Crawford St., archt. Howard, Johnson & Kelley, Scanlan Bldg., engrs. CD 12/17.

SOON LETS CONTRACT—BUILDINGS

Okla., Tulsa—WAREHOUSE and OFFICE—Jorgenson Steel Co., 5311 Clinton Dr., Houston, Tex., soon lets contract warehouse and office, E. Pine St. $300,000. W. A. McCracken, 4919 Montrose St., Houston, Tex., engr. CD 3/11, under Commercial Buildings.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

F. Morettini, 1416 E. Maryland Ave., St. Paul, Minn. and **J. J. McNulty,** 133 Third Ave. S., South St. Paul, Minn. LB $176,713. (Base Bid 1 $155,063. Base Bid 2 $21,650) sanitary sewer collection sys., CRYSTAL (P. O. MINNEAPOLIS), MINN. Village, H. Heise, clk., 5510 W. Broadway, Minneapolis 22, Minn. Bids Mar. 31. CD 3/18.

† **Campsey-Lytle-Richards,** 2238 Oneida St., Denver, Colo., CA $925,147, furnishing, stringing conductors (single circuit), and groundwires on the 122 mi. line from Fort Randall to Sioux City, SOUTH DAKOTA and IOWA. Bureau Reclamation, Dpt. Interior, Huron, S. D. Bids Mar. 18 awarded Mar. 26. CD 3/25, under LB.

▲ † **Bushman Constr. Co.,** 5 and **Felix** Sts., St. Joseph, Mo., LB $1,091,970, earthwork and structures, Bartley Canal, near Indianola and Holbrook, Red Willow and Furnas Counties, Spec. DC-3900, NEBRASKA. Bureau Reclamation, Dpt. Interior, McCook, Neb. Bids Mar. 31. CD 3/2.

▲ † **Western Contg. Corp.,** 400 Benson Bldg., Sioux City, Ia. CA $4,489,547, runways, taxiways, Wichita Air Force Base, Inv. 23-028-53-77, WICHITA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City 6, Mo. CD 3/6, under LB.

Southwest Constructors, 20 N. E. 26 St., Oklahoma City 6, Okla., LB $176,087, est. $225,000, utilities and grading for Classen High School, OKLAHOMA CITY, OKLA. Bd. Educ., 400 N. Walnut St., Oklahoma City, Okla. Hudgins, Thompson & Ball, 1100 W. Main St., Oklahoma City, Okla., engrs. CD 10/15/52, under Public Buildings.

Central Texas Telephone Co-operative, Inc., Goldthwaithe, Tex., Force Account, $115,000, 150 mi. rural pole telephone lines, Brady, TEXAS. CD 12/10/52.

Station KFDS-TV, Amarillo, Tex. Own Forces. $200,000. television station, AMARILLO, TEX. CD 1/2. 4/16/53.

City, Baytown, Tex., rejected bids Feb. 25, South Baytown Sewage Plant, BAYTOWN, TEX. $466,137. CD 1/21.

▲ **The Lummus Co.,** Milam Bldg., Houston, Tex., CA. Approx. $7,820,000, CATALYTIC REFORMING UNIT, for gasoline plant, near BEAUMONT, TEX. Magnolia Petroleum Co., South Beaumont, Tex. CD 5/14/52.

East Texas Television Co., Longview, Tex., Purchase and Hire. $245,000. television station, KTVE-TV, LONGVIEW, TEX. CD 1/28.

BUILDINGS

LOW BIDS AND CONTRACTS

Kloster Co., 4607 Beck Ave., St. Louis 16, Mo. CA $314,700. 2 story, ground floor, 62x124 ft., 52x76 ft., L-shaped elementary SCHOOL, Edmundson Rd. ½ mi. south of Natural Bridge, OVERLAND (ST. LOUIS 14 P. O.), MO. Bd. Educ., Ritenour Consolidated School Dist., Arthur A. Hosch, supt. Schools, 9120 Bristol Ave., Overland 14, MO. Bids Mar. 17. CD 3/9.

▲ **Lincoln Home Builders, Inc.,** 2263 Y St., Lincoln, Neb. Owner Builds. $3,000,000. HOUSING, 49 and 56 Sts. and Fremont and Colfax Sts., LINCOLN, NEB. CD 1/29.

▲ **Rorick Constr. Co.,** 905 S. 20 St., Omaha, Neb., CA. Approx. $2,291,045, 15 story APARTMENT, 36 St. and Dewey Ave., OMAHA, NEB. Lenoshire Apartment House, Inc., 905 S. 20 St., Omaha, Neb. N. R. Brigham, Keeline Bldg., Omaha, Neb., archt.

▲ **Manhattan Constr. Co.,** Manhattan Bldg., Muskogee, Okla., CA Approx. $2,800,000. 174,000 sq. ft. retail STORE, N. W. 23 and Pennsylvania Sts., OKLAHOMA CITY, OKLA. Sears Roebuck & Co., W. Arthington and S. Homan Sts., Chicago, Ill. Awarded Apr. 1. CD 2/25.

J. T. Wells Co., 4103 S. Detroit Ave., Tulsa, Okla. CA Approx. $900,000. MEDICAL CENTER, 22 and

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BUILDINGS

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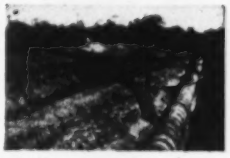

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On Pioneer Portable Rock and Gravel Plants — and dozens of other construction machines — you'll find Blood Brothers Universal Joints. Small, but vital, they "bend" engine power — permit efficient power flow around corners — and allow for changing shaft angles.

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* Series 4N Slip Assembly, 7N Slip Assembly, BW-3 Series and 1FN Joints.

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DENVER — HOUSTON — NEW ORLEANS

Wheeling Sts., TULSA, OKLA. Don Nix, Mayo Bldg., Tulsa, Okla. Awarded Mar. 29. CD 2/25.

E. O. Milburn, 2400 W. 7th St., Amarillo, Tex., Owner Builds. $300,000. 30 DWELLINGS, AMARILLO, TEX. CD 3/19.

Robert E. McKee, Box 2848, Dallas, Tex., CA. $697,000. Fincher SCHOOL, DALLAS, TEX. Southern Methodist University, Dallas, Tex. Bids Mar. 26. CD 3/4.

Sherman-Huddleston Constr. Co., Kingsville, Tex. Owner Builds. $515,000. Phase 1, 50 DWELLINGS, GRAND PRAIRIE, TEX. CD 3/27.

Center Development Co., 825 Sledge St., Houston, Tex. Owner Builds. $315,000. (A) 30 DWELLINGS, Deer Park, near HOUSTON, TEX. CD 3/16.

▲ **Grove Controls, Inc.**, Longview, Tex., Day Labor. $1,750,000. PLANT, LONGVIEW, TEX. CD 1/5.

▲ **George A. Fuller & Co.**, 597 Madison Ave., New York, N. Y., CA, Approx. $9,000,000, 20 story OFFICE and 2 more floors to Sears-Roebuck bldg., top three floors will park 400 automobiles; constr. 3 level structure being 20-story bldg. for airlines terminal, incl. restaurant, snack bar, drug store, DENVER, COLO. Ritz Carlton Realty Co., c/o Webb & Knapp, 383 Madison Ave., New York, N. Y. Jaros Baum & Bolles, 415 Lexington Ave., New York, N. Y., engr. G. Meredith Musick, 1000 Patterson Bldg., Denver, assoc. archt; Webb & Knapp, c/o I. M. Pei, 383 Madison Ave., New York, N. Y., archts. CD 12/3, under CA.

Modern Constr. Co., Box 1047, Santa Fe, N. M., LB $324,558, est. $550,000. 131x339 ft. masonry B. F. Young Junior HIGH SCHOOL classroom wing, SANTA FE, N. M. B. Educ., Santa Fe, N. M. W. C. Kruger, 227 E. Palace Ave., Santa Fe, N. M., engr.-archt. Bids Mar. 24.

FAR WEST

BIDS ASKED—BUILDINGS

Wash., Pullman—BOOK STORE—B.A. 4/28—Students Book Corp. of Washington State College, Pullman, 1 story, bsmnt., 80x130 ft., rein.-cln. book store. $300,000. Plans deposit $25. P. E. Keene, Washington State College, Pullman, archt. CD 9/22.

Calif., Calexico—SCHOOL—B.A. 5/12—Calexico School District, Calexico, Dool Elementary School addn. $500,000. Bowen, Rule & Bowen, 2835 Gilroy St., Los Angeles, engrs.

SOON LETS CONTRACT—BUILDINGS

▲ **Wash., Pasco**—DEPARTMENT STORE—Sears, Roebuck & Co., 2650 E. Olympic Blvd., Los Angeles, Calif., soon lets contract 58,000 sq. ft. department store. $2,000,000. W. Wagner, 1830 Van Ness Ave., Fresno, Calif., archts. CD 4/1.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **S. Birch & Sons Constr. Co.**, Ford Bldg., Great Falls, Mont., LB. $499,622, relocating 5½ mi. U.S. Hy. around Palisades reservoir, Palisades Proj., Spec. DC 3899, IDAHO. Bureau Reclamation, Dpt. Interior, Palisades, Idaho. Bids Apr. 1. CD 2/25.

▲† **Kloepfer & Gramkow**, 416 S. 6 St., Boise, Idaho, LB $1,587,181. est. $1,599,359, 9 barracks bldg., 2 mess and admin. bldgs., special vehicles bldg. at Mountain Home Air Force Base, Inv. 53-49, MOUNTAIN HOME, IDAHO. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Mar. 25. CD 3/4.

▲† **J. A. Terteling & Sons, Inc.**, 4011 Fairview Ave. Boise, Idaho, CA, $2,904,235, earthwork, structures East Low Canal, Station 2908 plus 00 to 4580 plus 00 and Scooteney Wasteway Station 0 plus 00 to 263 plus 40, Columbia Basin Proj. Spec. DC 3877, WASHINGTON Bureau Reclamation, Dpt. Interior Ephrata, Wash. Bids Mar. 3, awarded Mar. 31. CD 3/16, under LB.

Pacific Highline Contractors, Eugene, Ore., LB. $149,000, rural distr. lines, Dayton, WASHINGTON, Columbia County Rural Electric Assn., Inc., 204 E. Main St., Dayton, Wash. Bids Mar. 26. Inland Engr. Co., Ritzville, Wash., engr. CD 12/19/51.

▲ **WASHINGTON**—State Hy. Comm., Olympia.

Peter Kiewit Sons Co., Box 491, Longview, Wash., CA. $860,845, c. conc. 4.8 mi. Hy. 8, Sleret Ave. to Fisher Rd., Clark Co. Bids Mar. 31. CD 3/18.

WASHINGTON—State Hy. Comm., Olympia.

J. W. Hardison, Yakima, Wash., LB. $83,633, grading, surf. 18.75 mi. feeder roads, in Wheeler vicinity, Grant Co.;

McLaughlin Inc., P.O. Box 1824, Great Falls, Mont., LB. $250,854, light bit. surf. tr. and b. conc. 26.5 mi. Hys. 2, 3 and 11, Cheney to junction with Hy. 2, Spokane Co.;

Harrison Bros. Co., 225 Wakefield Dr., Tacoma, Wash., LB. $414,742, clearing, draining, grading 5.5 mi. Hy. 1, Maytown to Unwater, Thurston Co. Bids Mar. 31. CD 3/18.

▲† **McNutt Bros. & C. J. Montag**, 7805 N.E. Halsey St., Portland, Ore., CA. $4,945,530, Dexter Dam and Powerhouse, Lookout Point Proj., Lane Co., CIVENG 35-026-53-120, OREGON. U. S. Eng., Pittock Block, Portland, Ore. Bids Mar. 25, awarded Apr. 1. CD 3/31, under LB.

▲† **R. A. Westbrook, Morrison-Knudsen Co., Inc.** and **Ford J. Twaits Co.**, 411 W. 5 St., Los Angeles, Calif., CA. $6,587,130, runway and airfield pavements, Edwards Air Force Base, ENG-04-353-53-115, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 120, awarded Mar. 31. CD 3/26, under LB.

† **McDonald Bros.**, 6014 W. Adams Blvd., Los Angeles, Calif., CA. $841,333, technical administration bldg.,

(Continued on page 133)

"R B & W took us off a *hot spot* by cold-forging this key fitting"

● *"You know how important that little fitting is, Joe,"* continued Mr. Tobin. *"It connects the oil line to this filter we* make, and it was this component that gave us one headache after another."*

"How did you clear up the trouble?" Joe asked, as he peered at the oil filter he had seen on so many cars.

"Well, these spuds, as they are called, used to be machined from bar stock. If there were checks or seams in the bar, the machining process failed to detect them. Realizing that spot checking would not eliminate our difficulty, we were forced to magnetically inspect every single spud. This magnetic inspection threw production costs out of line on such a small item. It also showed us that a sizeable part of our production had to be rejected, thus indicating that a change of the production method was necessary.

"Then one of our men thought of RB&W and it wasn't long before their engineers came up with the idea of cold-forging this fitting. Cold-forging made the spud stronger and eliminated the danger of cracking and leaking. It also made the fitting easier to weld to the filter. As a bonus, they even did away with one of the machining operations by forging a countersink at the same time they forged the fitting. Now we're getting better spuds at lower cost in less time — and we no longer need the magnetic inspection."

Maybe this sounds like a special case to you, but it puts in sharp focus RB&W's down-to-earth engineering skill, as well as our practical experience in designing and fabricating the kind of fasteners that can solve your assembly problems.

Most of your fastener requirements can be met with standard products from our stock. However, if the unusual is called for, we'll design and make it for you—as efficiently and quickly as we turned out a better spud for this filter manufacturer.

Remember — for any fastening job, it's a smart move to call in RB&W. You can count on RB&W bolts, nuts, screws, and rivets for uniform accuracy, dependability and physical properties. And you can also count on fast service from RB&W's strategically located plants at: Port Chester, N.Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at: Philadelphia, Pittsburgh, Detroit, Chicago, Dallas, San Francisco. Sales agents at: Portland, Seattle. Distributors from coast to coast.

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*Fram Corporation, East Providence, R. I.

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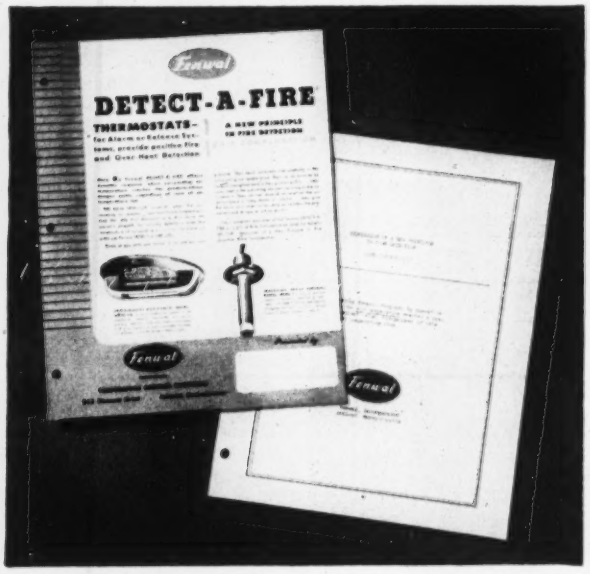
The FASTEST and SUREST detector for automatic fire alarm systems is DETECT-A-FIRE®

1. HOSPITAL FIRE DETECTION can be made faster and surer by use of detectors employing an entirely new principle. The Fenwal DETECT-A-FIRE thermostat avoids the limitations of ordinary detection devices . . . actuates the alarm *instantly* when the surrounding air temperature reaches a danger level.

2. SAVED MINUTES MEAN SAVED LIVES when it is necessary to evacuate patients. A detection system employing DETECT-A-FIRE units gives you that time. The stainless steel shell is *itself* the sensitive element that actuates the electrical contacts. At last complete protection against "lag" . . . and also against false alarms.

3. PERMANENT INSTALLATION, LONG-TIME VALUE. The slight difference in cost between Fenwal DETECT-A-FIRE thermostats and those less modern and comprehensive pays for itself twice: once in greater safety, again in long, trouble-free life. Not subject to corrosion or other deterioration because the electrical contacts are hermetically sealed in stainless steel.



4. FREE BULLETINS (above) contain complete details on Fenwal DETECT-A-FIRE thermostats, the only unit bringing you the benefits of Rate-Compensation Actuation, a new principle of fire detection. Fenwal engineers will gladly work with your system installer so that you will enjoy the advantages of *full* fire protection and *long term* economy. Write **Fenwal Incorporated, 264 Pleasant St., Ashland, Mass.**

Fenwal

DETECT-A-FIRE®

Thermostats

DYNAMIC, RATE-COMPENSATION ACTUATED FIRE DETECTORS

(Continued from page 130)

instrumentation and records laboratory bldg., Edwards Air Force Base, ENG-04-353-53-126, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 30. CD 3/3.

† **Frederickensen & Kasler & Peter Kiewit Sons' Co.,** 212 13 St., Sacramento, Calif., CA, **$837,144** roads and streets, Edward Air Force Base, ENG-04-353-53-222, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 30, awarded Apr. 1. CD 4/7, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Bell & Valdez, P.O. Box 134, Bellevue, Wash., Day Labor. **$612,000,** 38 HOUSES, BELLEVUE, WASH.

Pearson & Scott, P.O. Box 734, Bellevue, Wash. Day Labor. **$660,000.** 33 HOUSES, BELLEVUE, WASH.

G. H. Moen, 516 S. 5 Ave., Yakima, Wash., LB **$826,600,** general contract five 1 story steel, masonry buildings, rein.-con. fdns. for HIGH SCHOOL, SUNNYSIDE, WASH. School Dist. 201, Sunnyside, Wash. Bids Mar. 28. CD 3/6.

E. F. Shuck Constr. Co., 535 Pontius St., Seattle, Wash., LB, **$300,000,** 45x10 ft. rein.-con. CHURCH, SEATTLE, WASH. Gethsemane Lutheran Church, 9 Ave. and Stewart St., Seattle, Wash. Bids Mar. 27. CD 3/19.

▲ **George Buckler Co.,** 425 S. E. 17 St., Portland, Ore. LB. **$1,111,500,** Union HIGH SCHOOL, ALBANY, ORE. Albany School Dist., Albany, Ore. Bids Mar. 26. CD 3/10.

George H. Buckler Co., 4235 S. E. 17 St., Portland, Ore., LB. **$334,344,** LODGE HALL, ALBANY, ORE., Elks Lodge, Albany, Ore. Freeman, Hayslip & Tuft, 2040 S.W. 3rd Ave., Portland, Ore., archts.

▲ **Donald M. Drake Co.,** Lewis Bldg., Portland, Ore., CA. **$3,085,410,** general contract 14 story teaching HOSPITAL at University of Oregon Medical School, PORTLAND, ORE. State Bd. Higher Educ., University of Oregon, Eugene, Ore. Bids Apr. 1. CD 4/7, under LB.

▲ **C. L. Peck,** 816 W. 5 St., Los Angeles, Calif., CA. **$1,600,000.** two 6 story, 180 bed HOSPITAL wings, LOS ANGELES, CALIF. Mount Sinai Hospital, 590 N. Vermont St., Los Angeles, Calif. Bids Mar. 10, awarded Mar. 30. CD 3/3.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Ont., Pembroke—B.A. 4/20—Town, S. A. Thompson, clk.-treas., Municipal Offices, Pembroke 2,300 ft. 30 in. steel intake pipe, new screen well with steel sheet piling and rein.-con. substructure and brick superstructure. $150,000. Plans deposit $10. J. P. Howe, c/o owner, town engr. James F. MacLaren & Assocs., 705 Yonge St., Toronto, engrs. CD 2/20/48.

N. S., Halifax—WHARF REPAIRS—B.A. 4/22—Dpt. P. Wks. Hunter Bldg., Ottawa, Ont., wharf repairs and imprvs. at Swim's Point, Shelburne Co. $156,000. Plans deposit $25. R. Blais, c/o owner, engr. CD 3/26/52.

Ont., St. Catherines—B.A. 4/27—City, H. H. Smith, clk., Municipal Bldg., demolition of Glenridge concrete arch bridge and construction new steel truss bridge. $575,000. Plans deposit $50. B. L. Lamson, c/o owner, city engr. H. G. Acres & Co., 2135 Culp St., Niagara Falls, engrs. CD 10/3/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

W. C. Wells Constr. Co. Ltd., 140 Avenue F, Saskatoon, Sask. CA **$155,504.** irrigation work, Medicine Hat, ALBERTA. Alberta Government, Dpt. Agriculture, Ottawa, Ont. Prairie Farm Rehabilitation Admin., McCallum Hill Bldg., Regina, Sask., engrs. Bids Mar. 31. CD 3/17.

▲ **Canadian Bechtel Corp. Ltd.,** 25 King St. W., Toronto, Ont. and **Bechtel Corp.,** 220 Bush St., San Francisco, Calif., CA, Est. **$76,000,000,** 635 mi. 30 in. high pressure, all welded steel pipe line from Sarnia, Ont. to Superior, Wis., U.S.A., with extension into Minnesota, incl. 6 pumping stations, (1 at Superior, Wis.) ONTARIO-WISCONSIN-MINNESOTA Interprovincial Pipe Line Co., Subsidiary Imperial Oil Co., Princess St., Toronto, Ont. American section will be handled by Lakehead Pipeline Co. subsidiary of owner. CD 6/27/49, under Alberta and Saskatchewan.

Universal Plumbing & Heating Co. Ltd., 350 Brimley Rd., Cliffcrest, Toronto, Ont., LB, **$145,818** mechanical equipment for high level pumping station, Poplar Plains Rd., TORONTO, ONT. City, A. A. Lampors, mayor, City Hall, Toronto, Ont. CD 2/2/50.

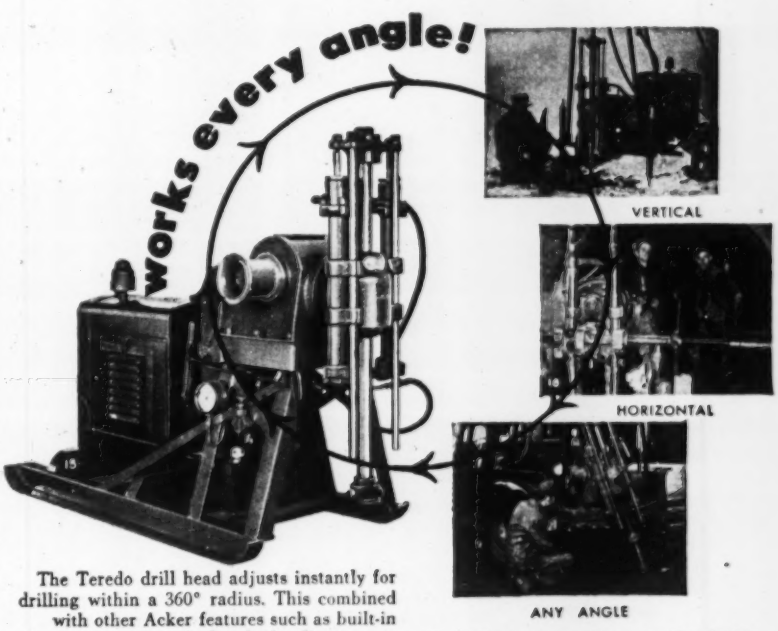
Shawinigen Water & Power Ltd., 600 W. Dorchester St., Montreal, Que. Owner Builds. **$200,000.** transmission line from Terminal Station, Three Rivers, QUEBEC. CD 3/1/45.

Iddon & Cornell, Inc., 4654 St. Catherine St. W., Montreal, Que., CA, **$340,000,** 3 story, 50x200 ft., steel brick, concrete Hangar No. 1 annex at airport, DORVAL, QUE. Trans-Canada Air Lines, 60 St. Catherines St. W., Montreal, Que. Bids Mar. 16. CD 3/4.

Northland Constr. Ltd., P.O. Box 840, Val d'Or, Que. CA **$843,310.** 6 buildings, R.C.A.F. Station, VAL D'OR, QUE. Dpt. National Defence, 70 Lyon St., Ottawa, Ont.

▲ **Banister Constr. Ltd.,** Northern Hardware Bldg., Edmonton, Alta., **Preston Clarke Ltd.,** Edmonton, Alta., and **Williams Bros. Ltd.,** Edmonton, CA, Est. **$7,000,000,** 115 mile 10 in. gas pipe line from Brock-Colville field to Saskatoon, SASKATCHEWAN. Saskatchewan

The NEW Acker Teredo Diamond Core Drill . . .



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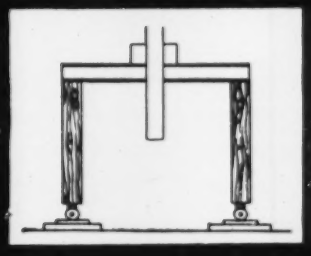

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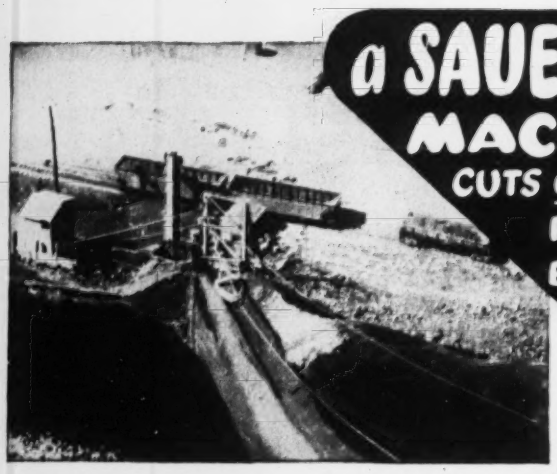

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Power Corp., 1739 Cornwall St., Regina, Sask. Awarded Mar. 30. CD 12/10.

W. C. Wells Constr. Co. Ltd., 140 Ave. F. North, Saskatoon, Sask., CA, $300,000, standard training bldg., Class 2 Stage 1, Air Force Base, SASKATOON, SASK. Defence Constr. Ltd. 400 Kensington Bldg., Winnipeg, Man. Awarded Mar. 27. CD 1/23/52.

BUILDINGS

LOW BIDS AND CONTRACTS

Ball Bros. Ltd., 49 King St. E., Kitchener, Ont., CA, $300,000, 4 story packing PLANT addn., KITCHENER, ONT. J. M. Schneider Ltd., 321 Courtland St. E., Kitchener, Ont. Awarded Mar. 30. CD 2/11.

Societe d'Habitations Modernes, Inc., Amos, Que. Owner Builds. $500,000. 24 brick, concrete DWELLINGS, AMOS, QUE.

J. M. Jeanson Ltd., 912 St. Louis St., Sherbrooke, Que., CA, $400,000, NOVITIATE, La Croix St., BROMPTONVILLE, QUE. Fathers of Sacred Heart, Arthabaska, Que. A. Belanger, 44 Nimy St., Sherbrooke, Que., archt.

▲ A. Janin & Co. Ltd., 1460 Sherbrooke St. W., Montreal, Que. CA Est. $1,000,000. apprentice TRAINING BLDGS. C and J, on Parthenais St., MONTREAL, QUE. Montreal Building Trades Apprentice Training Comn., 2253 Laurier Ave. E., Montreal, Que.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† Alaska—WARM STORAGE BLDG.—B.A. 5/13—U. S. Eng., Anchorage, 60x331 ft. rein.-con. masonry vehicle warm storage bldg., Eielson Air Force Base, ENG-95-507-53-77. $279,000. Plans deposit $10. CD 11/25.

† Alaska—STORAGE MAGAZINES—B.A. 5/19—U. S. Eng., Anchorage, six 42x28 ft. rein.-con. underground ammo storage magazines 14 ft. high, Ladd Air Force Base, Inv. 53-82. $576,000. Plans deposit $10. Young & Richardson; Carlton & Detlie, Central Bldg., Seattle 4, Wash., archts. CD 11/25.

SOON LETS CONTRACT—BUILDINGS

Alaska, Juneau—HOSPITAL—Sisters of St. Ann, Juneau, soon lets contract, hospital addn. $500,000. Foss, Malcolm & Olsen, Box 2331, archts. CD 4/1.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† L. E. Baldwin, Inc., 1103 N. 36 St., Seattle 3, Wash. CA. $5,886,500, 47 eight-family quarters bldgs., Inv. 53-47, Elmendorf Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Feb. 13. CD 2/28, under LB.

† Chris Berg, Anchorage, Alaska, LB $148,875, est. $153,722, lubricating and vehicle storage bldg., Ladd Air Force Base, Inv. 53-41, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Mar. 27.

▲† S. Bergeson, Rt. 10, Box 971, Tacoma, Wash. LB $2,200,000, 82x82 ft. steel frame powerhouse addn. with installation of equip., 22,000 ft. underground lines, etc., Spec. 31621, KODIAK, ALASKA. P. Wks. Officer, 17th Naval Dist., Kodiak, Alaska. Bids Apr. 2. CD 3/20.

BUILDINGS

LOW BIDS AND CONTRACTS

† Leavitt, Chandler & Co., Anchorage, Alaska, LB $449,398. 3 story central wing to composite HEADQUARTERS bldg., rein.-con., 19,300 sq. ft. Inv. 53-67, FORT RICHARDSON, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Mar. 31.

LATIN AMERICA

BUILDINGS

LOW BIDS AND CONTRACTS

† Frederick A. Snare Corp., 233 Broadway, New York, N. Y., CA. $750,000, installing SINTERING EQUIP. in nickel processing plant, NICARO, CUBA. Nickel Processing Corp., c/o General Services Admin., General Services Bldg., Wash. 25, D. C. CD 4/29/52.

Proposed Projects

WATER SUPPLY

Ark., West Memphis—City, WW imprvs. $425,000.

Calif., Castroville—Castroville County Water Dist. Post Office Bldg., Castroville, $170,000 bond election Apr. 28, water system. John C. Luthin, 1113 Laurent St., Santa Cruz, consult. engr.

Calif., Pleasanton—City, City Hall, voted $115,000 bonds Mar. 17, 2 m.g. reservoir and pumping plant. CD 2/18.

Calif., Santa Barbara—City, City Hall, $942,000 bond election May 5, ww sys. addns., imprvs. James M. Montgomery, 15 N. Oakland Ave., Pasadena, consult. engr. CD 12/30.

Fla., Live Oak—City, City Hall, WW imprvs. $200,000. Smith & Gillespie, P.O. Box 1048, Jacksonville, consult. engrs.

▲ Mich., Pleasant Ridge—South Oakland County Water Auth., 23646 Woodward St., 48 in. water main in Greenfield Rd. from Eight Mile Rd. to Fourteen Mile Rd. connecting with Detroit System serving Berkley, Pleasant Ridge, Clawson, Huntington Woods, Birmingham, Southfield and Royal Oak. $2,000,000. George G. Schmid, Pleasant Ridge, dir.-engr.

N. M., Carlsbad—Bd. Water Comrs., Carlsbad, two water storage tanks. $250,000.

(Continued on page 137)

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to outlast

any school...
cut maintenance too!

In times like these it's just good business to take a second long look when selecting windows for your school buildings.

Cost, of course, is a factor, but the WAY cost is figured is the important thing.

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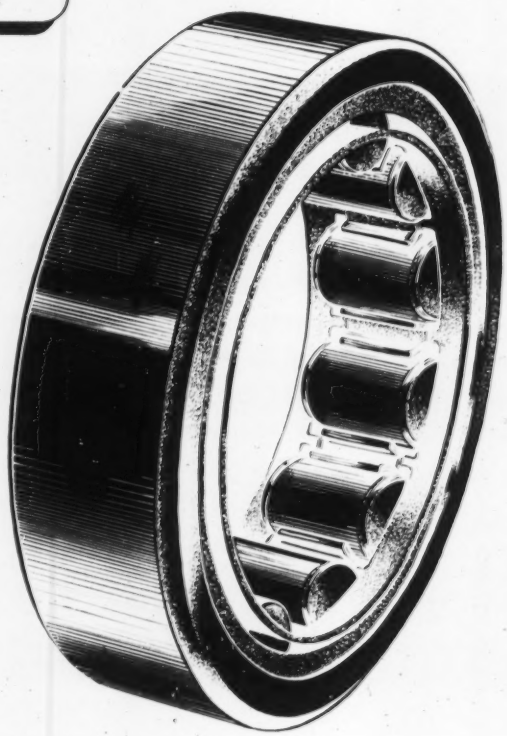

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Molded Rubber WATERSTOP

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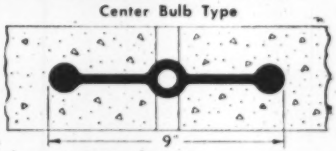

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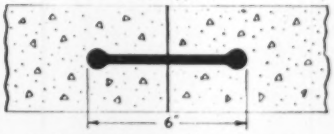

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(Continued from page 134)

N. C., Washington—City, voted bonds Mar. 22, WW imprvs. $617,000. CD 2/17.

O., Albany—Village, O. D. Pincelli, mayor, WW sys. $100,000.

O., Cleveland—City, City Hall, Zone 14, 24 in. water main, in Lakeland Blvd. to Eastlake boundary, $500,000. George W. Hamlin, acting comr. of utilities engr. CD 12/10/43.

O., Oakwood—City, A. C. Beergman, mgr., 500,000 gal. standpipe tank, Ridgeway Rd. $71,000; or 750,000 gal. tank, $138,000.

S. C., New Ellington—Town, WW sys. $100,000.

Tex., Daingerfield—City, water supply sys. $150,000.

Tex., Garland—City, Mar. 17 bond election held up, Phase 5, water storage and supply, $100,000; Phase 6, new water lines, sys. rehabilitation, $250,000. CD 3/3.

Tex., Velasco—City, water storage, $60,000; water supply, $40,000.

SEWERS, WASTE DISPOSAL

▲ Ark., Blytheville—City, City Hall, bond election Apr. 21, sanitary sewerage imprvs. $1,300,000. CD 8/17/50.

Ark., West Memphis—City, City Hall, sanitary sewer imprvs. $750,000. A. E. Haegler, National Bldg., Pine Bluff, consult. engr. CD 3/10/52.

Calif., San Jose—Santa Clara County Sanitation District No. 8, Court House, sewage disposal plant on Coyote River and out all sewers. $750,000. Mark E. Thomas & Co., 18 N. San Pedro St., consult. engrs.

Calif., San Pablo—San Pablo Sanitary District, San Pablo, $960,000 bond election May 5, sewers. Richard M. Starns Jr., 2054 University Ave., Berkeley, consult. engr. CD 2/13/52.

Fla., Gulfport—City, City Hall, sanitary sewers, $85,000; storm sewers, $62,000. CD 9/20/44.

Fla., Live Oak—City, City Hall, sanitary sewer imprvs. $400,000. Smith & Gillespie, P.O. Box 1048, Jacksonville, consult. engrs. CD 7/26/46.

Ga., Macon—City, City Hall, sewage disposal plant $300,000. Wiedeman & Singleton, P. O. Box 1878, Atlanta, consult. engrs. CD 1/8.

Ill., Lincoln—City, City Hall, will vote on referendum 4/21 to use bonds for sewer rehabilitation. $975,000. CD 2/20/52.

▲ Ill., Mount Carmel—Bd. Local Improvements, City Hall, sewage treatment plant and sewerage sys. $1,500,000. Warren & Van Praag, 253 S. Park St., Decatur, consult. engrs. CD 2/14/52.

▲ Ind., Kokomo—Bd. P. Wks., City Hall, sewage treatment plant and sewerage sys. $1,662,000. L. I. Couch Co., Inc., 230 E. Ohio St., Indianapolis, Zone 4, consult. engr. CD 1/14.

Mass., Danvers—Town, Town Hall, sewer constr. Upper Conant St. Sect. $185,000.

Mass., Saugus—Town, c/o W. E. Lawrence, mgr., Town Hall, sewers and drains, $250,000. Fay, Spofford & Thorndike, 11 Beacon St., Boston, consult. engrs. CD 3/27.

Mich., Detroit—City, Carl D. Warner, comr. P. Wks. Dpt., Guardian Bldg., relay station, compression facilities, dumping and compressing rubbish, and garbage, West Side, $250,000, George R. Thompson, city engr.

▲ Mich., Pleasant Ridge—Southeastern Oakland County Garbage & Rubbish Auth., 23646 Woodward Ave., rein.-con. garbage-rubbish incinerator, 35 acre site, Twelve Mile Rd. and John Rd., Royal Oak. $1,750,000. George G. Schmid, Pleasant Ridge, dir. engr. CD 8/27/52, under Mich., Royal Oak.

▲ Mich., Trenton—Village, Fred E. Pomeraning, clk., May 12 to finance storm sewer. $3,000,000.

Mo., Kansas City—City, c/o Reed McKinley dir. Dpt. P. Wks., City Hall, Manchester Trafficway sewer to Milwaukee Pumping Station, $120,000. CD 8/12.

N. Y., Wallkill—Town, treatment plant, sanitary sewers, Washington Heights Ave. $250,000. CD 3/9/44.

N. C., Washington—City, voted bonds Mar. 22, sanitary sewer imprvs. $508,000. CD 2/17.

O., Lisbon—Village, sewage disposal plant, interceptor sewer, sewerage sys. extens. Alden E. Stillson & Assoc., 209 S. High St., Columbus, consult. engrs. CD 11/11.

S. C., New Ellington—Town, sanitary sewers. $250,000.

S. C., Union—City, addnl. sanitary sewers, $600,000.

Tex., Garland—City, bond election Mar. 17 held up, Phase 3, sewage disposal unit $100,000; Phase 4, sanitary sewer lines, $150,000. CD 3/3.

Tex., Beaumont—Sandy Rawthorn, 2475 Gladys St. and Willis Thames, 3220 French Dr., sanitary sewers, $75,000; storm sewers, drainage, $70,000. George Schaumburg, American Natl. Bank Bldg., consult. engr.

Tex., Bellaire—Rotterman & Hoffman, 5213 Lindon St., Houston, Tract No. 1, sanitary sewers, $65,000; storm sewers, $60,000. John G. Turney, 406 Scanlan Bldg., Houston, consult. engrs. CD 3/27.

Tex., Mesquite—City, voted bonds Mar. 12, sewage disposal plant, $60,000; sanitary sewer collection lines, $60,000. Homer Hunter, 3708 Abrams Rd., Dallas, consult. engr. CD 8/20/51.

Tex., Velasco—City, sewage disposal unit, $75,000; sanitary sewer sys. rehabilitation and line extens. to Industrial area, $60,000.

Wash., Wenatchee—City, City Hall, disposal plant, $500,000 Gray & Osborne, Larson Bldg., Yakima, consult. engrs. CD 9/24/51.

Continued on page 139)

Construction Idea saves 70 tons of steel

Welding Column Bars *Saves $18,000 in Hospital Construction at Burlingame, California.*

SAVINGS of at least $18,000 and 70 tons of steel resulted when column bars were welded in construction of the new 165 bed Peninsula Hospital at Burlingame, California.

In addition to saving 21 pounds of metal per splice, a saving of at least $7,000 resulted from a reduction in column size. A smaller column size due to compactness of welded splices has increased the floor area at corridors. In construction, reinforcing bars are simply butt welded with Lincoln "Fleetweld 7" electrode providing a solid, continuous member throughout the column.

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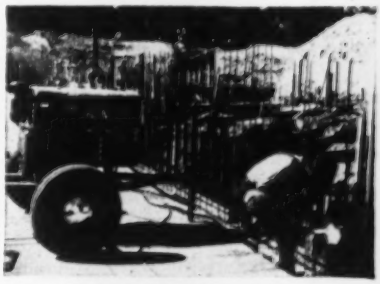

SPEEDS CONSTRUCTION. Welding of column bars is done at low cost with Lincoln "Fleetweld 7" using light, portable 250 amp "Lincwelder" powered by air cooled engine. Hospital was designed by the architectural firm of Stone and Malloy and S. P. Marracini, all of San Francisco. Structural engineers were Adrian, Graham and Hayes. Cecco Steel Company erected reinforcing steel.

THE LINCOLN ELECTRIC COMPANY
Cleveland 17, Ohio
THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

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Ask for bulletin RM-108 which fully describes Cleaver-Brooks Mobile Boilers.

(Continued from page 137)

BRIDGES

▲ **LOUISIANA**—State Hy. Dpt., Highway Office Bldg., Baton Rouge,
Jefferson Parish—vehicular tunnel under Intracoastal Canal, $5,500,000, Palmer & Baker, Inc., Staples Pake Bldg., Mobile, Ala., consult. engr.
Tex., Fort Worth—City, c/o W. O. Jones, mgr., City Hall, four-lane, 41 ft. wide, frame temporary bridge, parallel to W. 7th St. bridge (to be used while permanent bridge is being lengthened, widened and repaired). $105,000. C. M. Thelin, Fort Worth, Dir. P. Wks. CD 10/11/45.
Wash., Port Angeles—City, City Hall, 2nd St. Overpass, $366,360.

STREETS AND ROADS

Colo., Denver—City and Denver Co., City and County Bldg., Street paving District 195, c. conc. curb, gutter, sidewalk, grav. base course, b. conc. paving $259,000; Street Paving Dist. 196, c. conc. curb, gutter, sidewalks, grav. base, b. conc. paving, $183,000. Terry Owens, City and County Bldg., city engr. CD 2/27/50.
▲ **GEORGIA**—State Hy. Dpt., 2 Capitol Square, Atlanta
Floyd Co.—relocation of Hy. 27 in City of Rome, $100,000.
Richmond Co.—superhighway between 4 and 5 Sts. in City of Augusta, $6,665,000.
Ky., Louisville—Jefferson County Fiscal Court, Louisville, road and bridge over Greasy Creek to parallel L & N spur to General Electric Plant Appliance Park, Benchel. $140,000. J. B. McTamany, co. engr.
MICHIGAN—State Hy. Dpt., Charles M. Ziegler, comr., 222 Townsend St., Lansing, Zone 13.
Macomb Co.—reconstr. M-29 from New Baltimore to Perch River Proj. incl. realignment and rebuilding b. conc. 22 ft. wide 5.3 mi. $620,000. Harry C. Coons, ch. engr.
Neb., Beatrice—City, paving, $250,000.
Neb., Lincoln—City, City Hall, and Lancaster Co., construct bypass at Randolph St. $160,000. D. L. Erickson, city engr.
Neb., Lincoln—City, City Hall, first phase of the new southwest diagonal highway, $400,000. H. L. Erickson, city engr. CD 6/9.
NEW YORK—Dpt. P. Wks., New York State, Alfred E. Smith State Office Bldg., Albany, Zone 1,
Chenango Co.—construct 3.2 mi. arterial highway Incl. bridge over Chenango River, in and near city of Norwich, $952,800.
Tex., Fort Worth—City, c/o W. O. Jones, mgr., 30,500 sq. yd. permanent type pavement for streets on outskirts of town, downtown area, incl. 9 such streets. $204 000. C. M. Thelin, Fort Worth, dir. P. Wks. CD 9/17/51.
▲ **VIRGINIA**—State Hy. Dpt., 1221 E. Broad St., Richmond, and City of Norfolk, City Hall, Norfolk.
Norfolk Co.—wid'n. to 6-lanes and imprv. 1.3 mi. Brambleton Ave., Federal Urban Hy. Proj. $1,000,000. Myron Sturgeon Engineers, 2124 Kimball Terrace, Norfolk, consult. engrs.
▲ **WASHINGTON**—State Hy. Comn., Olympia,
Spokane Co.—freeway from center of Spokane 11 mi. to Greenacre, $8,000,000. W. A. Bugge, state hy. engr.
▲ **Wash., Seattle**—City, County—City Bldg., Seattle, Zone 4, access road to proposed 1 Ave. S. Bridge over Duwamish Rd. $1,200,000. W. E. Parker, city engr.

EARTHWORK, WATERWAYS

▲ **Calif., Gilroy**—South Santa Clara Water Conservation Dist., Gilroy, $3,667,000 bond election Apr. 28 water supply system for district. CD 1/28.
† **Michigan**—U. S. Eng., 1990 Cadillac Tower, Detroit, harbor development, on Chicago-Detroit Line, Harbor of Refuge, rebuilding piers to 8.5 mi. above low water, wid'n. river into yacht basin, Leland. $200,000. CD 6/9/44.
Tex., Longview—Lake Cherokee Water Co., c/o V. A. Clements, Longview Natl. Bank, const. earthen dam (10 mi. above existing dam) across Lake Cherokee to double capacity of existing lake. $750,000.

AIRPORTS

Ind., Fort Wayne—MAINTENANCE—Indiana Air National Guard, State House, Indianapolis, 1 story, brick maintenance bldg., Baer Field, $130,000. CD 1/19/49.
Tex., Waco—SHOP—U. S. Eng., 100 W. Vickery St., Fort Worth, motor maintenance shop, James Connally Air Force Base. $100,000. Spicer & Bush, 503 Amicable Bldg., consult. engrs. and archts. CD 8/6/51.
† **Wash., Seattle**—APRON, etc.—Boeing Airplane Co., 7755 E. Marginal Way, 40x60 ft., 40x80 ft., 40x20 ft. steel frame buildings, concrete apron and utilities, for tank testing facility at Boeing Field, $350,000. CD 5/7/52.

PUBLIC BUILDINGS

▲ **Ala., Montgomery**—DORMITORY, etc.—State, State Capitol Montgomery, plans by J. Paul Gilmore, Farm
(Continued on page 142)

Resurfacing A Major Highway without closing it to traffic

with the H & B MOTO-PAVER

While designed primarily for resurfacing work on secondary roads and city streets, the *Moto-Paver* here demonstrates its efficiency in resurfacing a major highway. Traffic was maintained on this highway—one of the busiest in the East—while the work was being done. The lower picture shows aggregate being dumped into the Moto-Paver hopper on the job.

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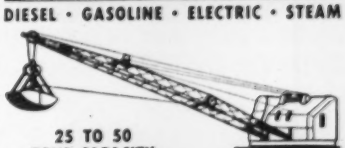

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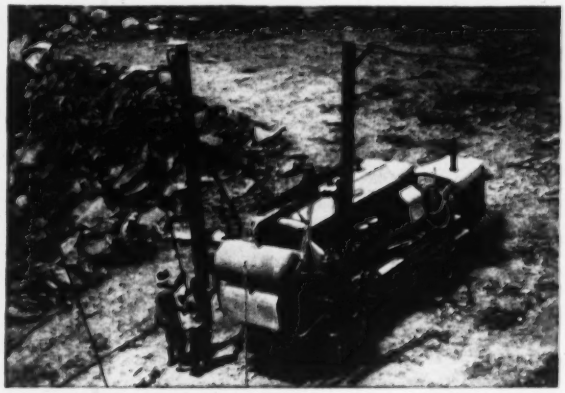

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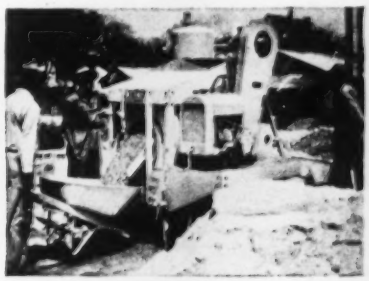

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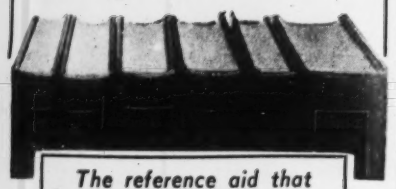

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(Continued from page 139)

Security Bldg., TB hospital, $750,000; plans by Wilmot C. Douglas 226 N. 14 St., Birmingham, dormitory $350,000; plans by Don B. Schuyler, Tuscaloosa, auditorium, $970,000, all foregoing at Partlow School for Mental Deficiencies.

Ala., Mount Vernon—T. B. BLDG.—State, State Capitol Montgomery, plans by Laurence E. Allen, 209 Park Pl. Mobile, TB bldg. and Searcy State Hospital, $870,000.

▲ Ark., Little Rock—SCHOOL IMPRVS.—Little Rock School District, City Hall, voted bonds, school imprvs. $4,000,000. CD 1/30.

Calif., Fairfield—SCHOOL—Fairfield Elementary School District, Box 1157, plans by Schmidts & Hardman, 1320 University Ave., Berkeley, elementary school near California and First Sts. $500,000.

Calif., Fresno—JAIL—City, City Hall, cancelled bond election Apr. 13, holdover jail, etc. $600,000. CD 3/17.

▲† Calif., Los Angeles—EXTRUSION, etc.—The Harvey Machinery Co., Inc., 19400 S. Western Ave., extrusion bldg. and forge bldg., 19400 S. Western Ave., for Dpt. Army, $3,000,000.

▲ Calif., Pasadena—SCHOOLS—Bd. Educ., 351 S. Hudson St., voted $4,840,000 bonds, elementary school.

Calif., Placerville—HIGH SCHOOL—El Dorado Co., Court House, $800,000 bond election May 15. high school addn.

▲ Ga., Cairo—SCHOOLS—Grady Co. Bd. Educ., Cairo, Whigham High School, $300,000; Washington Consolidated School, $475,000; Cairo High School, $500,000.

Ga., Gainesville—SCHOOL IMPRVS.—Hall Co. Bd. Educ., Gainesville, bond election May 12, school imprvs. $975,000. Extended date. CD 3/26.

▲ Ill., Macomb—SCIENCE—State, State Capitol, Springfield, plans by Louis H. Gerding, ch. state archt. Armory Bldg., Springfield, science bldg., Western Illinois State College, $2,666,000. CD 3/8/46.

Ind., Berne—SCHOOL—Adams Central School, Berne, consolidated school. $500,000.

▲ Ind., Elkhart—SCHOOL—Bd. Educ., Elkhart, Junior High School, $1,000,000.

▲ Ind., Elkhart—GYMNASIUM—Elkhart School, City Elkhart, gymnasium. $1,000,000.

Ind., Rochester—SCHOOLS—School Bldg. Holding Co., Jas. Zimmermann pres., plans by Everett J. Brown, Circle Tower, Indianapolis, Zone 4, two grade schools, Elm and Franklin Sts., also 6 and J Sts., $600,000.

Ia., Des Moines—WAREHOUSE—Iowa State Liquor Control Comm., E. 7 and Court Sts., plans by Ralph Arnold, state archt., Des Moines, liquor warehouse, $500,000.

Ky., Louisville—SCHOOL—Bd. Educ., Fifth and Hill Sts., plans by Arrasmith & Tyler, Lincoln Bank Bldg., Louisville, Junior High School (negro) for Cotter Homes Housing, $600,000. CD 11/14/51, under LB.

▲ Mass., Billerica—SCHOOL—Town, plans by Charles H. Cole, 55 Waltham St. Lexington, high school, River St. $2,250,000. CD 12/3.

▲ Mich., Muskegon—SCHOOL—City, Bd. Educ., Muskegon Junior High School and 5 elementary schools, $7,000,000.

▲ Mich., Northville—THERAPY—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, plans by O'Dell, Hewlett & Luckenbach, 950 Hunter Bldg., Birmingham, brick, steel, concrete occupational and recreational therapy unit, $1,500,000 CD 1/29/53; brick, concrete employed patients' bldgs., $1,200,000; brick, steel, concrete maintenance shop and warehouse, $400,000, Northville State Hospital. CD 1/16/51.

O., Whitehall (Br. Columbus)—HIGH SCHOOL—Truro Twp. Bd. Educ., Whitehall, $659,000 bond election May 5, high school.

Pa., Hyde Park—HIGH SCHOOL—Joint School Dist. of Hyde Park and Allegheny Twp., Hyde Park, plans by Howard & Murphy, Butler Co. Natl. Bank, Butler, 1 story part bsmnt., brick, block, Junior High School, near here. $716,000. CD 9/25/52.

S. C., Graniteville—HIGH SCHOOL—Aiken Co. Bd. Educ., Aiken, high school. $600,000.

▲ Tenn., Springfield—HOSPITAL—Robertson Co., Springfield, plans by Hart, Freeland & Roberts, 3rd Natl. Bank Bldg., Nashville, hospital. $2,000 000.

Tex., Garland—POWER PLANT—City, bond election Mar. 17 held up., Phase 1, electric power plant expansion $650,000. CD 3/2.

▲ Tex., Lindale—POWER PLANT—Town, C. J. Boyd, mayor, 30,000 kw. municipal light and power plant, near Lake, north of town, $5,700,000, bonds voted; enlarging, imprv. light and power plant, $750,000. J. M. Loyd & Assoc., Tyler, consult. engrs. CD 3/18.

Tex., Sherman—HOSPITAL—City, voted $515,000 bonds Feb. 25, St. Vincents Hospital. $946,000.

▲ Va., Arlington—HIGH SCHOOL—Arlington Co. School Bd., 1426 N. Quincy St., plans by Rhees E. Burket, 1223 Connecticut Ave. N. W., Wash. D. C., Williamsburg High School, $1,730,000. Beall & LeMay, 1726 "M" St., N.W., Wash, D. C. consult. engrs. CD 4/24/51.

▲ Alta., Red Deer—HOUSING—City and Central Mortgage & Housing Corp., Kensington Bldg., Winnipeg, Man., 200-housing units. Approx. $2,000,000. K. F. Hurst, c/o owner, consult. engr.

(Continued on page 145)

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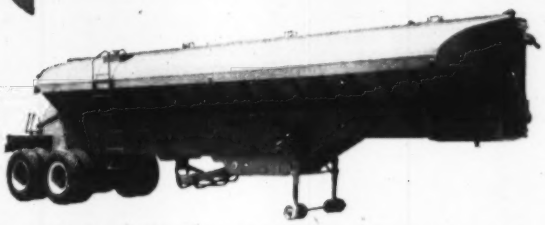

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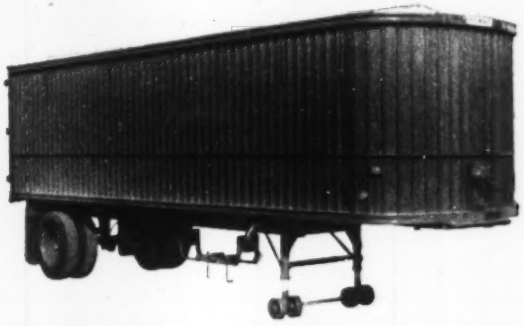

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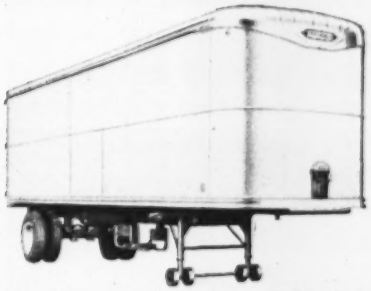

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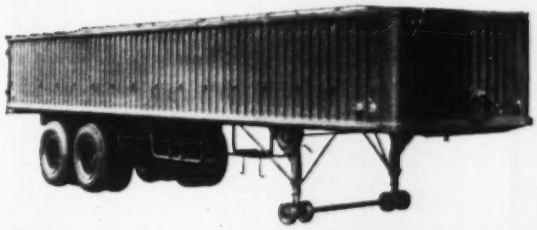

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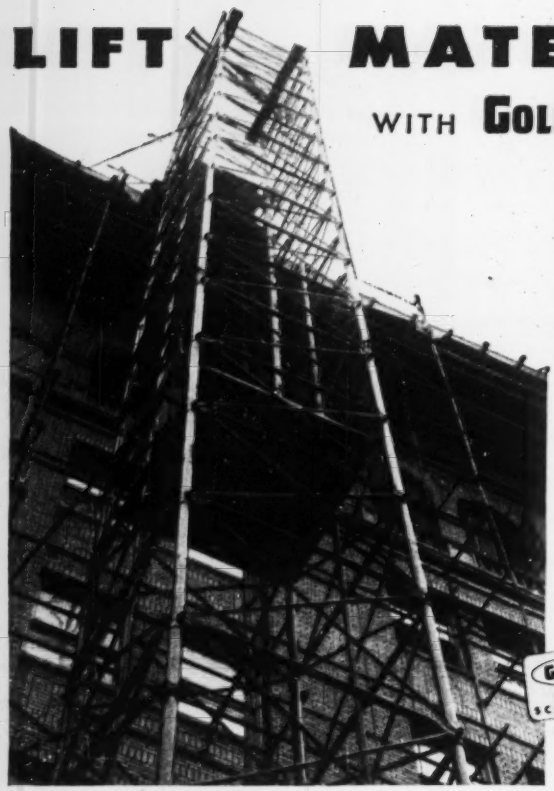

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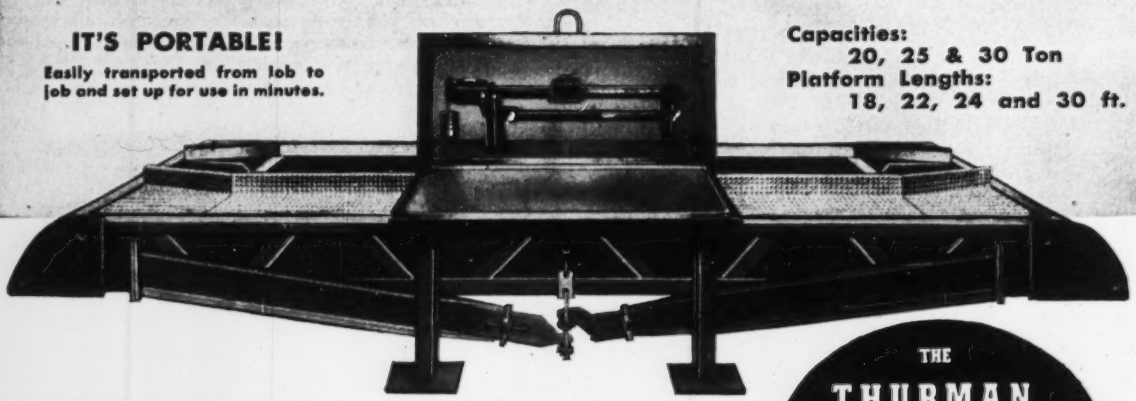

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(Continued from page 142)

COMMERCIAL BUILDINGS

▲ **Calif., Palos Verdes**—DORMITORIES,—etc.—Palos Verdes College, Rolling Hills, plans by Welton Becket & Assocs., 5657 Wilshire Blvd., Los Angeles, 3 dormitories, classroom bldgs., auditorium and chapel art bldg., library, student center and gymnasium $15,000,000.

▲ **Calif., San Jose**—STORE, etc.—F. W. Woolworth Co., 405 Montgomery St., San Francisco, store remodeling and addn., 29 South First St. $600,000. John J. Gould, Financial Center Bldg., San Francisco, structural engr. CD 1/26/49.

Ind., Anderson—DORMITORY—Anderson College E 5 St., plans by Miller & Henning, archts. and consult. engrs., 518 Anderson Bank Bldg., 4 story, 43x180 ft., brick, stone, steel, rein.-con. men's dormitory. $550,000.

Ind., Fort Wayne—CHURCH—Bethlehem Lutheran Church, Rev. A. C. Scholz, pastor, 3705 S. Anthony St., church annex. $750,000.

▲ **Ind., Indianapolis**—APARTMENT—Harry E. Berke, Architects Bldg., plans by Mies van der Rohe, Ludwig, 37 S. Wabash St., Chicago, Ill., 50 unit apartment, $1,500,000.

▲ **Ind., Marion**—HOMES—Prairie Homes Co., Matter Park Rd., Marion, homes, roads and streets $1,400,000.

▲ **Ky., Louisville**—DWELLING UNITS—Southern Baptist Theological Seminary, 2825 Lexington St., plans by Jos. H. Kolbrook, Starks Bldg., 208 dwelling units for married students. $1,150,000. E. R. Ronald & Assoc., 553 S. Third St., consult. engrs. CD 12/23.

Mass., Dedham—RESIDENCES—Raymond A. Brown, 225 Walnut St., 50 residences. $600,000.

Mass., Fitchburg—Y.M.C.A. BLDG.—Fitchburg Young Men's Christian Assn., c/o G. K. Simonds Jr., chn. Bldg., Comm., Intervale Rd., plans by Tessier & Maloney, 220 Dwight St., Springfield, Y.M.C.A. bldg. Wallace Ave. $700,000. CD 4/16/46.

Mich., Bay City—SCHOOL—St. James R. C. Parish, Bay City, 3 story, brick, steel high school, $750,000.

▲ **Mont., Billings**—OFFICE—Socony Vacuum Oil Co., 1511 Poly Dr., 5 story office. $1,000,000.

▲ **N. J., Metuchen**—SHOPPING CENTER—Lomen Constr. Co., c/o Lathrop Douglass, archt., 518 Fifth Ave., New York 36, N. Y., Menlo shopping Plaza, and stores and 10 story professional bldg., on 100-acre tract near Roosevelt Park, Raritan Twp. $15,000,000.

▲ **N. J., Yardville**—HOUSING DEVELOPMENT, etc.—Sunnybrae Corp., 60 Park Place Newark, N. J., for c/o Alvin E. Orlian, 9 Prospect Park, West Brooklyn, N. Y.,) housing development and integrated shopping center on tract of land now occupied by Sunnybrae Golf Club, S. Broad St. between White Horse and Yardville. $25,000,000.

▲ **N. Y., Forest Hills**—APARTMENT—Sam Lefrak, 97-27, 64 Rd. plans by George Miller, 19 W. 44 St., New York Zone 18, 6 story apartment, Clyde St., east of 67 Ave. $1,250,000.

N. Y., Forest Hills—APARTMENT—L. Tyman, c/o George Miller, archt., 19 W. 44 St., New York, Zone 18, 6 story apartment, 68 Rd., east of Queens Blvd. $750,000.

▲ **N. Y., Jackson Heights**—APARTMENT—Sol Atlas, 10 Grace Ave., Great Neck, 6 story apartment, 72 St. and 41 Ave. $1,000,000.

N. Y., Jamaica—APARTMENT—Kent Arms, Inc., c/o Morris Rothstein & Son, archts., 186 Joralemon St., Brooklyn, Zone 2, 6 story apartment, 139 St. and Manton St. $750,000.

▲ **N. Y., New York**—APARTMENT—236th Street, Inc., 349 E. 149 St., Zone 51, plans by S. V. Becker, 122 E. 38 St., Zone 16, 11 story apartment, on block bounded by Henry Hudson Parkway west, 235 St., Independence Ave. and 236 St. $1,200,000.

N. Y., New York—APARTMENT—Putter-Fibe Bldg. Co., 2050 Hering Ave., plans by S. J. Kessler & Sons, 118 E. 28 St., Zone 16, 6 story apartment, Pelham Parkway south, east of Eastchester Rd. $600,000.

▲ **N. Y., Poughkeepsie**—SHOPPING CENTER—Syndicate, c/o Jay Bonomo, 332 E. 149 St., New York, Zone 51, shopping center, 500 houses, 250-acre tract, Rte. 9, 6 mi. south of here. $7,000,000.

O., Ada—DORMITORY—Ohio Northern University, Ada, plans by Britsch & Munger, Nicholas Bldg., Toledo, 100-student dormitory. $550,000-$600,000. CD 12/26/45.

O., Cincinnati—DORMITORY—Xavier University, Dana Ave., plans by Albert V. Walters, Federal Reserve Bank Bldg., 4 story brick, rein.-con. dormitory, Ledgewood Ave. $900,000.

▲ **O., Shaker Heights**—APARTMENT—Chalfant Manor, Inc., 15901 Onaway Rd., 5 apartments, Van Aken Blvd. between Daleford and Chalfant Rds. $1,250,000.

▲ **Tex., Austin**—OFFICE—Lowich Investments, Inc., 1200 S. Ervay St., Dallas, 5 story, 110,000 sq. ft., bsmnt., masonry office. $2,000,000.

▲ **Tex., Beaumont**—DWELLINGS—Sandy Rawthoen, 2475 Gladys St., and Willis Thames, 3220 French Dr., Phase No. 1, 20 dwellings, $300,000; Phase No. 2, 40 dwellings, $550,000; Phase No. 3, 35 dwellings, $525,000; Phase No. 4, 38 dwellings, $640,000; Phase No. 5, 44 dwellings, $660,000; Phase No. 6, 28 dwellings, $420,000; Phase No. 7, 32 dwellings, $480,000; Phase No. 8, 25 dwellings, $350,000; Phase No. 9, 41 dwellings, $615,000, in 80-acre tract off Lucas Dr. between old Voth and Helbig Rds. George Schaumburg, American Natl. Bank Bldg., consult. engrs.

▲ **Tex., San Antonio**—APARTMENT-HOTEL-Syndicate, c/o Norman Lowery, 218 Grotto St., plans by MacKie & Kamrath, 2713 Ferndale Pl., Houston, apartment-hotel. $1,000,000.

(Continued on page 147)

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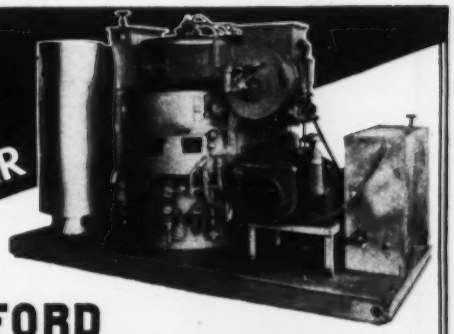

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(Continued from page 145)

W. Va., St. Albans—OFFICE—Chesapeake & Potomac Telephone Co. of W. Va., 917 Lee St., Charleston, dial-toll office bldg. $500,000.

▲ Ont., Aldershot—SHOPPING CENTER—John Cowan Aldershot, will not construct shopping center Hy. No. 2 Glenacres Subdivision, $1,300,000. Project abandoned. CD 3/16.

▲ Ont., Ottawa—SHOPPING CENTER—H. A. Kapas & H. B. Burritt, c/o Rhodes & Radcliff Ltd., 216 Laurier Ave. W., Ottawa, shopping centre, incl. 450 apartment units, 250 simple dwelling units, stores, Carling Ave., to be known as Westwood Project. $9,000,000.

▲ Que., Shawinigan South—HOUSES—H. A. Beaudet, 221 Blvd. St. Maurice, 221 houses, commercial centre, etc., Rang St. Mathieu off Route National No. 19. $2,500,000.

INDUSTRIAL BUILDINGS

Ala., Leeds—PLANT—Crown Cork & Seal Co., Inc., 5 S. Haven St., Baltimore, Md., plant. $750,000.

▲ Ark., Ozark—GENERATING PLANT—Arkansas Electric Co-operative, Fayetteville, abandoned plans for steam generating plant when Supreme Court ruled Government could not enter Steam power plant field, $10,558,000. CD 7/17/51.

▲ Ill., Springfield—MILL, etc.—Illinois Farm Supply Co., 100 E. Ohio St., Chicago, stock feed grain processing mill, warehouse and offices. $1,500,000.

▲ Ky., Louisville—PLANT—Reynolds Metal Co., 2500 S. Third St., plant addns., alterations $3,000,000.

Mass., Boston—PLANT—Armour & Co., Union Stock Yards, Chicago, Ill., plans by Allmon Fordyce & William Hamby, 488 Madison Ave., New York, N. Y., meat processing plant, 301 Southampton St. $860,000. Strobel & Salzman, 70 W. 40 St., New York, N. Y., struct. engrs.

▲ Pa., Pittsburgh—PLANT—The Sun-Telegraph, Telegraph Square, plans by Prack & Prack, 119 Federal St., 3 story, 72x180 ft., brick, block, steel fr. newspaper plant, $2,000,000.

▲ S. C., Bennettsville—MILL—Oak River Mills, Bennettsville, plans by Charles T. Main, Inc., 80 Federal St., Boston, Mass., mill. $1,000,000.

▲ Tennessee—ALUMINUM PLANT—Wheland Co., 2800 Broad St., Chattanooga, plans by Giffels & Vallet, Inc., Marquette Bldg., Detroit, Mich., aluminum plant. $70,000,000. site not selected. CD 2/12.

▲ Tex., Freeport—CHEMICAL UNIT—Dow Chemical Co., Freeport, polyethylene plastic mfg. chemical unit. $7,500,000.

▲ Tex., Henrietta—COMPRESSOR STATION—Lone Star Gas Co., 1915 Wood St., Dallas, 2,640 hp. compressor station in connection with gas storage program, $275,000; 6 mi. 12 in gas pipe line, $80,000; under ground earthen gas storage cavern, $900,000. CD 8/21.

▲ Tex., Texas City—CHEMICAL PLANT—Texas City Chemicals, Inc., Texas City, addnl. chemical plant units constr. on 125-acre site. $85,000,000.

Ont., Smith Falls—FACTORY—R.C.A. Victor Co. Ltd., 1001 Lenoir St., Montreal, Que., 48,000 sq. ft. factory $750,000.

▲ Que., Montreal—WAREHOUSE—Bell Telephone Co. of Canada Ltd., 1050 Beaver Hall Hill, plans by P. Booth, 485 McGill St., 11-s story, 225x690 ft., concrete, steel, stone warehouse, Kings Park Road $2,500,000. T. Pringle & Sons Ltd., 485 McGill St. engrs. CD 9/22.

▲ Que., Murdock—REFINERY—Gaspe Copper Mines Ltd. Murdock, refinery and ore concentration. $1,000,000.

▲ Que., Thetford Mines—TERMINAL IMPRVS.—Quebec Central Ry. Co., L. A. Comeau, engr., 89 Wellington St. W., Sherbrooke, railway terminal imprvs., incl. 7 mi. new railroad from Flintkote Rd. to Johnson's Road, new station at Thetford Mines, $1,000,000.

UNCLASSIFIED

Ala., Enterprise—NATURAL GAS SYSTEM—City, City Hall natural gas system. $300,000. J. W. Goodwin Eng. Co., 2111 7 Ave. S., Birmingham, consult, engr.

Ga., Eatonton—NATURAL GAS SYSTEM—City, City Hall, natural gas system. $530,000. Ray R. Littrell & Assocs., P. O. Box 103, Athens, Ga., consult. engrs. CD 2/26.

Ga., McDonough—NATURAL GAS SYSTEM—City, City Hall, natural gas system. $350,000. Ray R. Littrell & Assocs., P. O. Box 103, Athens, consult. engrs.

Ga., Thomson—NATURAL GAS SYSTEM—City, City Hall, natural gas system. $735,000. Ray R. Littrell & Assocs., P. O. Box 103, Athens, consult. engrs. CD 2/12.

▲ Michigan — POWER LINE CONNECTIONS — Detroit Edison Co., 2000 Second St., Detroit, power line connections 2 short high voltage transmission lines connecting sys. Port Huron and Sarnia, Ont. and Detroit and J. Clark Keith Station, $3,000,000.

Mich., Detroit—TRAFFIC SIGNALS—City, A. F. Malo, dir. Streets & Traffic Dpt., traffic signals on one-way sections Livernois, Dragoon, Dubois and St. Aubin Sts., over street type signal lights, Twelfth, Fourteenth, Cass, Warren, Grand River, McNichols, Van Dyke and Davison Sts. $560,000. George R. Thompson, Guardian Bldg., city engr.

▲ Ohio-Michigan—PIPE LINE—Sun Pipe Line Co. (subsidiary of Sun Oil Co., 3200 Independence Rd., Cleveland, O.) 8 in. petroleum products pipe line between Toledo O. and Inkster Junction west of Detroit, Mich. incl. twin crossing of Maumee River near Toledo, O. $1,300,000.

Ohio and Pennsylvania—PIPE LINES, etc.—Manufacturers Light & Heat Co., c/o Columbia Gas System, Inc., 120 E. 41 St., New York 17, N. Y., 9.3 mi. pipe lines and gas facilities in Columbiana Co., Ohio and western Pennsylvania. $348,700.

Ohio—PIPE LINE—Natural Gas Co. of West Virginia, c/o Columbia Gas System, Inc., 120 E. 41 St., New York 17, N. Y., 21.3 mi. pipe line in northern Columbiana Co., incl. new 6 in. line on Rte. 62, west of Salem and north to Western Reserve Rd., near Salem. $840,000.

Ore., Portland—TELEVISION STATION—Columbia Empire Telecasters, Inc. (KPOJ), 1019 SW. 10th Ave., television station. $504,000. A. E. Towne, 2655 Van Ness Ave., San Francisco, Calif., consult. engr.

S. C., Bamberg—GAS SYSTEM—City, Natural gas sys. $425,000. Ray R. Littrell & Assoc., P. O. Box 103, Athens, Ga., consult. engrs. CD 3/13.

S. C., Denmark—GAS SYSTEM—City, natural gsa sys. $405,000 Ray R. Littrell & Assoc., P. O. Box 103, Athens, Ga. consult. engrs. CD 3/13.

S. C., Walterboro—GAS SYSTEM—City, natural gas sys. $990,000. Ray R. Littrell & Assoc., P. O. Box 103, Athens, Ga., consult. engrs. CD 3/13.

Tenn., Lexington—GAS SYSTEM—City, natural gas sys. $685,000.

Texas—COAXIAL CABLE—Southwestern Bell Telephone Co., 1121 Capitol St., Houston, laying coaxial underground cable between Houston and Galveston for TV services, $250,000; laying addnl. coaxial cables in vicinity of Houston to care for addnl. services for area's 2 existing stations, $500,000; expansion of "Repeater" Stations (television) for Dallas-Houston Axial Cable Services, $750,000. CD 5/9/50, 7/16/51, and 11/16/45, under Houston and Dallas respectively.

Texas—RURAL DISTRIBUTION LINES—Upshur Rural Electric Co-operative, Gilmer, 148 mi. rural distr. lines, sys. imprvs., complete previously approved constr. Upshur Co. $445,000. CD 2/19/48.

▲ Utah—Idaho—PIPE LINES—Salt Lake Pipe Line Co., North Salt Lake City, Utah (Subsidiary of Standard Oil Co. of California, 225 Bush St., San Francisco, Calif.), (2nd line) 330 mi. products pipe line, Salt Lake City, Utah to Boise, Idaho. $8,000,000.

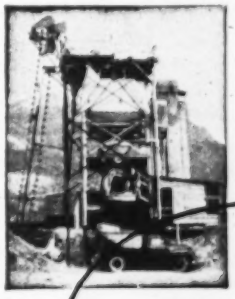
Va., Norfolk—STATION—WTAR Radio Corp., 720 Boush St., Station WTAR-TV television tower and transmitter plant. $450,000-$500,000. CD 4/18/52.

Wash., Seattle—TELEVISION STATION—KXA, Inc., 312 Bigelow Bldg., television station. $340,000. A. E. Towne, 2655 Van Ness Ave., San Francisco, Calif., consult. engr.

Wash., Seattle—TELEVISION STATION—Queen City Broadcasting Co. (KIRO) 1530 Queen Anne Ave., Zone 4, television station, $534,000. J. B. Hatfield, 926 35 Ave., Zone 22, consult. engr.

"THAT'S REALLY THE WAY TO HANDLE CONCRETE"

says L. G. (Bud) Waigand, Project Manager, Peter Kiewit Sons Co.



Two men ran this Noble batch plant with 28S Koehring mixer

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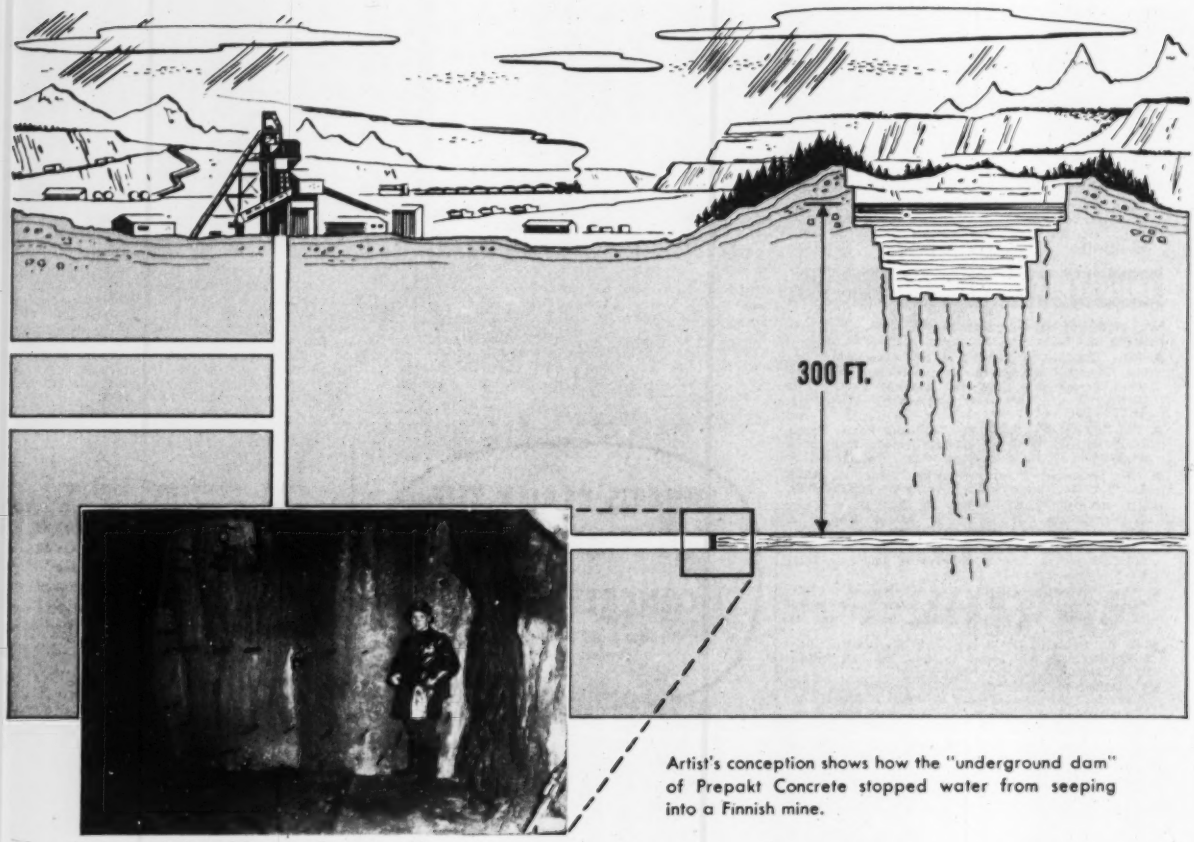

Artist's conception shows how the "underground dam" of Prepakt Concrete stopped water from seeping into a Finnish mine.

Mine tunnel plug of Prepakt Concrete withstands water pressure of 130 psi.

PREPAKT IS BEST FOR *UNDERGROUND* DAMS, TOO!

High-strength Prepakt Concrete—with recognized advantages for the construction and maintenance of conventional dams—has also demonstrated its superiority for "underground dams".

In this case the "underground dam" was a tunnel plug deep in a Finnish mine. It was constructed by one of Finland's largest mining companies to end a constant pumping problem caused by water entering the mine from a nearby open quarry.

The Prepakt Concrete plug consists of a 13-foot square reinforced cross wall built by preplacing coarse aggregate in forms, then pumping voids full with Intrusion mortar. Over six feet thick, this "underground dam" withstands a 300-foot hydrostatic head and has created a sizeable surface lake.

The absence of setting shrinkage of Prepakt Concrete and its high-strength bond with the complete tunnel surface (including the roof) produced an unusual and highly successful application.

Full information on this and other applications of Prepakt Concrete may be obtained from the Main Office, Cleveland, Ohio.

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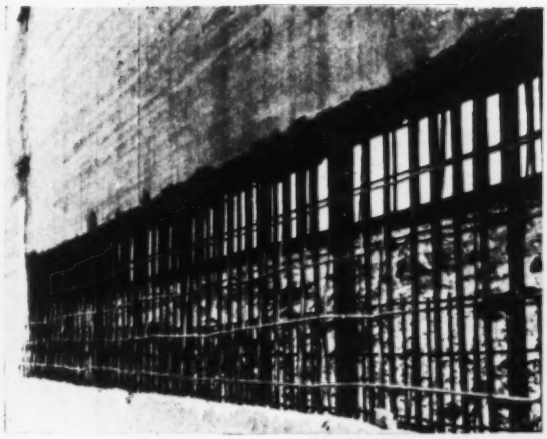
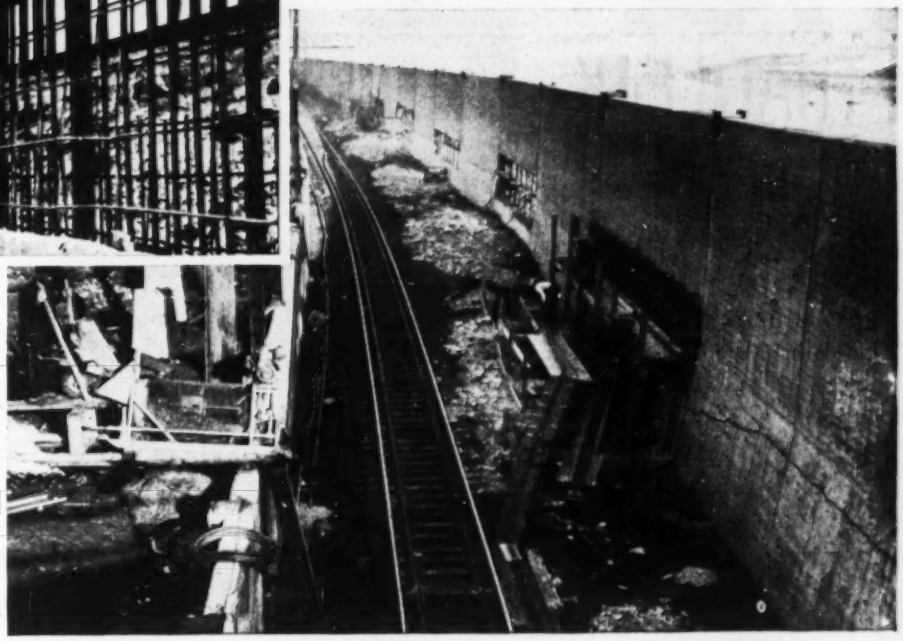


Left: Section of flood wall at Kansas City Showing exposed re-inforcement after removal of all damaged concrete prior to Prepakt repair.

Below: Flood wall during Prepakt repair operations. Note weakening crack caused by reverse pressure of flood waters.



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Whether it's in new construction or concrete repair, there is always one *best way* to accomplish the best results. In an ever increasing number of projects, Prepakt is being chosen as the *best* method to do the job.

Repair of the 25-foot Armourdale flood wall at Kansas City is typical. Reverse loading of this wall by the 1951 flood cracked about 1,100 feet of the wall, seriously weakening the structure.

Prepakt methods and materials provided exceptional advantages in this repair project. First, Prepakt methods *completely* filled the repair openings with high-strength concrete having a superior bond to the old concrete. The low drying shrinkage and high weather resistance of Prepakt Concrete provided the structure with additional strength for long trouble-free service.

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(SIKA-KOTE, SIKA TRANSPARENTS) SIKA-KOTE, a protective and decorative coating in 9 colors and white, prevents moisture penetration on concrete and masonry structures. SIKA TRANSPARENTS render brick structures water-repellent and preserve their appearance.

FOR NON-LEAKING SURFACES
(SIKACRETE, SIKA-KOTE) Water-resistant SIKACRETE mortar is used wherever cement-coat work is indicated. Economical, easy to apply SIKA-KOTE prevents penetration of ground-moisture.

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(SIGUNIT, SIKA No. 4, PLASTIMENT) For quick work against leaks or in tidal areas, SIGUNIT in mortar prevents washouts. SIKA No. 4 (GROUT-SIKA) accelerates set, increases cohesion of mortar and adhesion of grout to rock.

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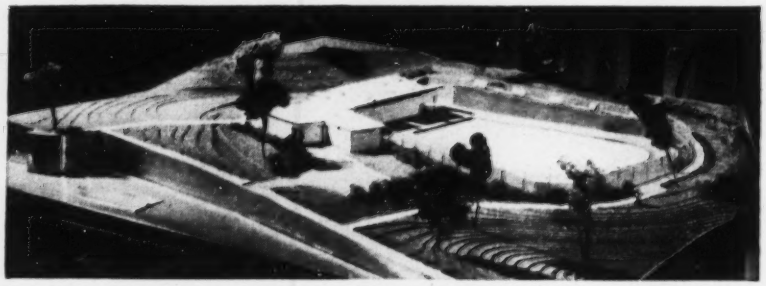

FAN-SHAPED SWIMMING POOL WITH BATH HOUSE—Model for $100,907 Candler Park project, Atlanta, Georgia. (Photo by Tuggle)

Swimming pool and bath house, Georgia

Construction of a 6,000 sq ft swimming pool and bath house in Candler Park, Atlanta, has been awarded for $100,907 by the Parks Department of the City of Atlanta.

George R. Rice, Jr. and A. P. Brindley, engineers and land architects for the park department estimated the cost of the pool alone at $10 per sq ft and awarded the contract to the Spalding Concrete Company, the lowest of two bidders, for $61,007 or $10.17 per sq ft.

The swimming pool is to be 96-ft long, fan-shaped, 42 ft-6 in. wide at the deep end and 76 ft wide at the shallow end. Depth ranges from 3 ft to 10 ft.

A utility tunnel adjacent to the exterior wall of the pool houses the inlet line, vacuum cleaner line and a scum gutter of the open step riser type utilizing recirculated water. The filter room is on the same level as the pool deck and part of the bath house. Diatomite filters will be used.

Richard Naiman & Co. was the lowest of three bidders on the $39,900 bath house contract which includes besides the bath house, such items as lockers, showers, sight baffles and toilet enclosures.

Work began February 1, with May 1 set as the completion date. Bricklayers are receiving $2.90 per hr; plasterers, $2.75 per hr; electrical workers, $2.60 per hr; and common laborers, $1.13 per hr.

Bidders include:

Swimming pool

1C Spalding Con. Co., Griffin, Ga.	$61,007
2 Southland Pool & Eng. Co.	73,544

Items	Unit	1C Unit price	1C Total	2 Unit price	2 Total
Excavation	cy		$422.40	$2.75	$1,660
F & I monolithic conc	sf	$2.25	16,187	3.16	18,960
F & I wading pool & reinf pool deck with color	sf	0.55	.....	0.55	.....
without color	sf	0.45	3,928*	0.50	3,485*
F & I bri scum gutter & coping	lf	2.98	909.20	6.00	1,950
F & I tile lane & depth markings	sf	3.00	732.00	3.25	715.00
F & I pool interior finish	sf	0.40	2,875	0.60	4,320
F & I filter, filter elements, accessories & gauges, precoat gravity pot, filter-aid feeder	ls	.....	5,344	.....	7,900
Chlorinator	ls	.....	2,000	.....	2,416
Circulating pump, motor, & primer	ls	.....	1,207	.....	1,595
Pump strainer & hair catcher	ls	.....	405.00	.....	295.00
Scum gut drain line & drains	lf	7.74	.....	6.10	2,074
Inlet line & inlet fittings	lf	8.63	.....	6.40	2,176
Outlet line & grates	lf	10.00	.....	15.00	1,260
Vacuum cleaner line & fittings	lf	6.00	.....	5.50	1,243
Pool fittings	ls	.....	233.23	.....	.....
Vacuum cleaner	ls	.....	368.00	.....	321.00
F & I utility tunnel	ls	.....	1,709	.....	4,626
F & I pick-up pit	ls	.....	424.00	.....	628.00
Furn & apply paint to mechanical equipment	sf	0.20	100.00	0.11	189.00
F & I submarine lights	ls	.....	3,900	.....	1,405
F & I electrical work	ls	.....	875.00	.....	1,700
F & I filter room slab	ls	.....	207.68	.....	417.00
F & I spring board & standards	ls	.....	735.00	.....	1,471
Ladders	ls	.....	180.00	.....	170.00
Life line anchors & lane line anchors	ls	.....	60.00	.....	79.00
Life line	ls	.....	32.00	.....	140.00
F & I pool deck drainage	ls	.....	1,769	.....	.....
Drains	ea	10.00	.....	.....	1,440
Drainage pipe	lf	3.50	.....	5.00	30.00
F & I fence	ls	.....	1,898	.....	2,139
6' high fence & gate	lf	3.77	.....	4.50	.....
8' high fence & gates	lf	5.42	.....	6.00	.....
F & I wall	ls	.....	3,804	.....	6,250
6' 10' high wall	sf	2.72	.....	5.00	.....
1' 6' high wall	sf	2.72	.....	3.00	.....
F & I conc walks & steps with color	ls	.....	2,780	.....	2,250
Conc walks with color	sf	0.55	.....	0.60	.....
Without color	sf	0.46	.....	0.55	.....
Conc steps with color	lf	2.70	.....	3.00	.....
without color	lf	2.50	.....	2.90	.....

* Includes total for pool deck both with and without color

Bath house

1C Richard Naiman & Co.	$39,900
2 Adams & Willis	43,430
3 T. Shackel for Construction Co.	45,292

Items	Unit	Total prices 1C	Total prices 2
Foundation & slab	ls	$1,640	$ .....
Brick masonry	ls	7,800	.....
Roof struct, incl all struct decking, roofing, skylights & flashing	ls	7,200	.....
Plumbing work	ls	6,020	.....
Electric work	ls	3,030	.....
Other	ls	14,210	.....
Alternates			
Brickwork	ls	360.00	1,445
Tile work	ls	1,700	1,100
Paving	ls	2,400	1,850
Tote baskets	ls	2,040	1,950
Racks	ls	180.00	.....

For every community need in modern outdoor seating

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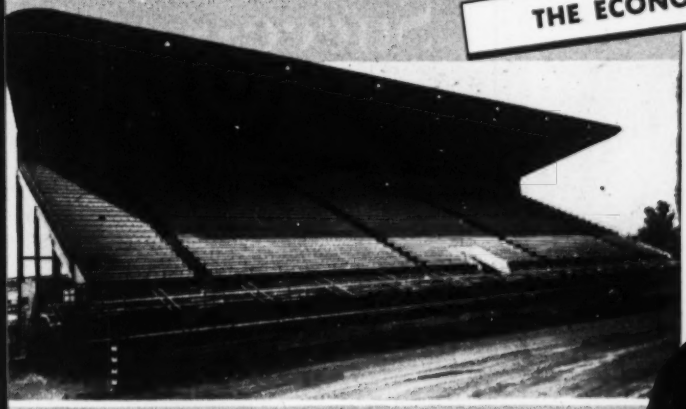
THE ECONOMY OF LONG LIFE

THE SATISFACTION OF FINE APPEARANCE



MERCED COUNTY, CALIF. Fairgrounds Stand. 2600 seats: four rows of box seats, 23 rows grandstand seats.

TROY, OHIO. One of two football stands, capacity 5,000 seats each. Note press box and enclosed underdeck area.

DES MOINES, IOWA. Baseball Stand. 2700 grandstand seats plus 500 box seats, totalling 3200 capacity.

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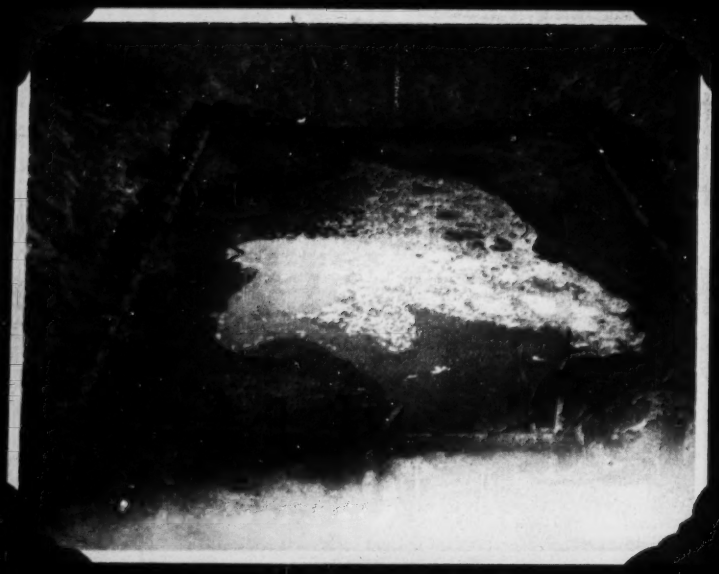
CHICAGO (3), 1218 First National Bank Bldg.
LOS ANGELES (48), ... 6399 Wilshire Blvd.
DES MOINES (8), 915 Tuttle Street
DALLAS (1), 1219 Praetorian Bldg.
SEATTLE . . . . . 522 Lane Street
SANTA CLARA, CAL., 621 Alviso Road

From the MORETRENCH ALBUM



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Conditions:

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Achievement:

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
April 20 Connecticut
STREETS AND ROADS
April 20 Connecticut

BIDS ASKED—BUILDINGS

Me., Bath—SCHOOL—B.A. 4/23—City. Lorging R. Additon, supt. Schools, steel, concrete Junior High School, Lincoln St. $525,000. Plans deposit $50, refundable, Alonzo J. Harriman, Inc., 292 Court St., Auburn, archt. CD 10/6/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

NEW HAMPSHIRE—State Dpt. P. Wks & Hys., Concord, **Hen-Ray Constr. Co. Inc.**, 440 Waverly St., Framingham, Mass., LB **$416,171**, road mix 3.285 mi. N.H. 3A, Bristol and Bridgewater. Bids Apr. 3.

Daddario-Piatelli, 73 Tremont St., Boston, Mass. LB **$412,830**. est. $400,000. sewerage works Stony Brook Sect. 17, Hyde Park, BOSTON, MASS. Dpt. P. Wks., City Hall Annex, Boston, Mass. Bids Apr. 2. CD 3/11.

BUILDINGS

LOW BIDS AND CONTRACTS

Bedford Gardens c/o R. Rolde, 10 Tremont St., Boston, Mass. Owner Builds. **$420,000**. Sect. 2, (30 duplex) RESIDENCES, BEDFORD, MASS. CD 8/15/52.

Park Constr. Co., 40 Court St., Boston, Mass. CA **$468,800**. Elementary SCHOOL Islington Sect., WESTWOOD, MASS. Town, School Bldg. Comn., E. W. Thurston, supt. Schools, Deerfield Ave., Westwood, Mass. CD 2/17, under LB.

Spectre Constr. Co., Inc., 18 Newbury St., Boston, Mass. LB **$457,440**. elementary SCHOOL, Wildwood St., WILMINGTON, MASS. Town, Supt. Schools, 159 Church St., Wilmington, Mass. Bids Mar. 27. CD 3/9.

West Ridge Homes, c/o Ryder, Struppmann & Neumann, archts., 163-18 Jamaica Ave., Jamaica, N. Y., Owner Builds, **$400,000**. 34 HOUSES on tract on West Rocks Road, NORWALK, CONN.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
April 23, 24 New Jersey
STREETS AND ROADS
April 23, 24, 28 New Jersey

BIDS ASKED—BUILDINGS

N. Y., Luzerne—SCHOOL—B.A. 4/20—Bd. Educ., Hadley-Luzerne Central School Dist., Luzerne, Central School bldg. addn. $500,000. CD 8/29/47.

N. J., Caldwell—PENITENTIARY—B.A. 5/6—Bd. Freeholders Essex Co., Hall of Records, Newark, Caldwell Penitentiary addns., alterations, Elm Rd. $700,000.

▲ **N. Y., Mt. Vernon**—SCHOOL—B.A. 6/4—Bd. Educ., 257 S. Fourth Ave., elementary school. $1,000,000. CD 1/21.

D. C., Wash.—APARTMENTS—Bids Asked—Bellevue Gardens, 2331 Cathedral Ave. N. W., Wash., D. C., 70 two and three story, brick, cinderblock apartments, First and Joliet Sts. N. W. $700,000. Santmyers & Thomen, 2209 L St. N. W., archts.

SOON LETS CONTRACT—BUILDINGS

Pa., Phila.—MACHINE SHOP—Budd Co., 22 St. and Huntington Park Ave. and at office Giffels & Vallet, Inc., archt., 1000 Marquette Bldg., Detroit, Mich., soon lets contract, machine shop. $500,000. CD 1/31/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **A. Dierks & Co., Inc.**, 159 West St., Brooklyn, N. Y. CA **$773,733**, central heating plant addn. and related work. Griffiss Air Force Base, Serial No. ENG-30-075-53-342, ROME, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids Mar. 26. CD 2/25.

Carl E. Widell & Son, 505 Station Ave., Haddon Heights, N. J., LB **$549,112**. sewage disposal plant and intercepting sewers, LEWISTOWN, PA. Municipal Auth., Lewistown, Pa. Bids Mar. 25. CD 2/24.

Cestone Bros., 1403 Broad St., Bloomfield, N. J. CA **$577,292**, Contr. 1, sewers, WEST NORRITON TWP. (Norristown P.O.), PA. West Norriton Twp. Municipal Auth., 14 Orchard Lane, Norristown, Pa. Bids Feb. 25. CD 3/11, under LB.

▲ **Jos. F. Hughes & Co.**, 5 W. Franklin St., Baltimore, Md. CA **$2,692,000**. Phase No. 4 Baltimore Memorial Stadium, second deck with roof to cover 30,000 seats, admin. bldg., BALTIMORE, MD. City, Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore, Md. CD 3/23, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Buffalo Housing Auth.**, 901 City Hall, Buffalo 2, N. Y. rejected bids Dec. 9, general constr., LB **$4,431,000**; plumbing, LB **$535,000**; heating, LB **$462,700**; electrical work, LB **$359,436** for 464 HOUSING units, BUFFALO, N. Y. CD 12/15, under LB.

▲† **U. S. Eng.**, 121 N. Broad St., Phila., Pa., rejected bids Mar. 3, Quartermaster ADMINISTRATION bldg., water lines, sanitary and storm sewers, railroad spur, truck apron, Eng-36-109-53-195, FORT DIX, N. J. U. S. Eng., 121 N. Broad St., Phila., Pa. LB **$1,315,448**. CD 3/12, under LB.

† **Bonwit Constr. Co.**, 100 Gold St., New York, N. Y., LB, **$452,230**, WAREHOUSES, railroad paving, etc. FORT MONMOUTH, N. J. U. S. Eng., 80 Lafayette St. New York, 13, N. Y. Bids Mar. 19. CD 1/15.

▲ **Mahony-Troast Constr. Co.**, 657 Main Ave., Passaic, N. J. CA **$3,000,000**, tank modification PLANT and PROCESSING DEPOT, NEWARK, N. J. Chrysler Corp., 341 Massachusetts Ave., Detroit, Mich. Bids Mar. 23. CD 3/18.

Paul L. Edinger, Stroudsburg, Pa., CA. **$500,000**. 1 and 2 story 110x250 ft. brick, steel mfg. PLANT addn., EAST STROUDSBURG, PA. Line Material Co., East Stroudsburg, Pa. Bids Mar. 3. CD 3/2.

▲ **Griffith & Shedler**, 69 and Walnut Sts., Upper Darby, Pa., Separate Contracts. **$4,500,000**. RESIDENTIAL DEVELOPMENT, Chester Pike, Ridley Twp., FOLSOM, PA. Erling Wenge, McClatchy Bldg., Upper Darby, Pa. archt.

▲ **Louis J. Rosato**, 201 W. Broadway Ave., Clifton Heights, Pa., Separate Contracts. **$1,920,000**. RESIDENTIAL DEVELOPMENT, Pattdexe and Frederick Rds., HAVERTOWN, PA.

Max Chipin, 6301 N. Crittenden St., Phila., Pa. Separate Contracts. **$440,000**. RESIDENTIAL DEVELOPMENT, Mt. Airy-Stenton Ave. Sect., PHILA., PA.

George Shapiro, 2235 Wood St., Phila., Pa., CA. **$982,000**. RESIDENTIAL DEVELOPMENT, 9000 Frankford Ave., PHILA, PA. Owner, c/o general contractor.

▲ **McCloskey & Co.**, 1620 W. Thompson St., Phila., Pa. LB **$1,936,000**, Mill Creek HOUSING, PHILA., PA. Phila. Housing Auth., 42 S. 15 St., Phila., Pa. Bids Mar. 31. CD 3/24.

† **Land & Simmons Co.**, 3922 Hickory Ave., Baltimore, Md., LB **$879,873**. 64x290 ft., 45 ft., 64 ft., 90 ft. wings, concrete, E-shaped C.I.C. SCHOOL, Fort Holabird, BALTIMORE, MD. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. Bids Mar. 27. CD 3/11.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
April 24 Kentucky
STREETS AND ROADS
April 24 Kentucky

▲ **Ala., Tuscaloosa**—FIELD HOUSE—B.A. 6/3—University of Alabama, Tuscaloosa, athletic fieldhouse. $2,000,000. Miller, Martin & Lewis, Title Guarantee Bldg., Birmingham, archts.

BIDS ASKED—BUILDINGS

▲ **Va., Norfolk**—HOUSES—Bids Asked—Mamie Properties, Inc., c/o Saulzberg, 1125 Graydon St., 150 one-story frame houses. $1,000,000. CD 8/14/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **J. A. Jones Constr. Co.**, P.O. Box 966, Charlotte, N. C. CA. **$950,000**, water treatment plant imprvs., increases capacity to 15 m. g.p.d. RADFORD, VA. U. S. Eng., foot of Front St., Norfolk, Va. Hayes, Seay, Mattern & Mattern, 609 Jefferson St., Roanoke, Va., engrs. CD 6/20, under Public Buildings.

▲ **V. B. Higgins Co.**, Greensboro, N. C., LB **$1,114,940**, Sugar Creek Sewage Treatment Plant addns. Contrs. 3, 4, 5 and 6, CHARLOTTE, N. C. City, Henry A. Yancey, city mgr., City Hall, Charlotte, N. C. Bids Apr. 2. CD 3/12.

R. McDonald, 3867 Arden Rd., Jacksonville, Fla. and **A. C. Samford, Inc.**, P.O. Box 1029, Albany, Ga. CA Approx. **$750,000**, radio relay stations between Jacksonville, FLORIDA and Atlanta, GEORGIA. Southern Bell Telephone Co., Hurt Bldg., Atlanta, Ga.

ALABAMA—State Hy. Dpt., Montgomery.

C. F. Rule Constr. Co., 217 13 Ave. N., Nashville, Tenn., CA. **$907,000**, bridge over Coosa River, Gadsden, Etowah Co. Bids Mar. 27. CD 4/1, under LB.

LOUISIANA—State Hy. Dpt., Highway Office Bldg., Baton Rouge.

Forcum-James Co., 1565 Choctaw Dr., Baton Rouge, La. CA **$735,359**. Intracoastal Canal Bridge at North Bend, S.P. 243-02-08, F.A. Secondary Proj. S 43 (3), St. Mary Parish. CD 3/26, under LB.

▲ **Houston Contg. Co.**, 2707 Ferndale St., Houston, Tex. CA Est. **$4,000,000**. 45 mi. crude oil pipe lines from Erath Sta. to Bayou Sale Sta., LOUISIANA. Texas Pipe Line Co., Texas Co. Bldg., Houston, Tex.

† **James McHugh Constr. Co.**, 6449 S. Park Ave., Chicago 37, Ill. CA **$598,000**. 5 pumping plants Covington Floodwall, Covington, KENTUCKY. U. S. Eng., 830 W. Broadway, Louisville, Ky. Bids Mar. 26. Awarded Mar. 31. CD 3/30, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Christ the King Parish, 3401 Cottage Toll Rd., Norfolk, Va. rejected bids Apr. 2, CHURCH bldg. and SCHOOL, LB. **$445,221**, NORFOLK, VA. CD 4/7, under LB.

O. W. Godwin, Inc., Dunn, N. C., CA. **$812,610**, Hanover County HIGH SCHOOL addn., WILMINGTON, N. C. New Hanover Co. Bd. Educ., Wilmington, N. C. CD 4/1 under LB.

† **T. H. Pearce Constr. Co.**, Edgewood Circle, Columbus, Ga., LB, **$437,750**, civilian CAFETERIA Marine Corps Depot of Supplies, NOY 72925, ALBANY, GA. Dpt. Navy, Officer in Charge of Constr., Naval Base, S. C. Bids Apr. 2. CD 3/9.

O. E. Bright & J. D. McClamb, 30 E. Bryan St., Savannah, Ga. Owner Builds. **$500,000**. SHOPPING CENTER, SAVANNAH, GA.

S. J. Curry Co., P.O. Box 143, Albany, Ga., LB **$586,317**. SCIENCE bldg. for Florida A & M College, TALLAHASSEE, FLA. State Bd. Control, Education Bldg., Florida State University, Tallahassee, Fla. Bids Mar. 31. CD 3/13.

Bear Constr. Co., 222 W. Pensacola St., Tallahassee, Fla. LB **$545,435**. Westcott HALL addn., at Florida State University, TALLAHASSEE, FLA. State Bd. Control, Education Bldg., Florida State University, Tallahassee, Fla. CD 11/12.

Edward M. Fleming Constr. Co., 4211 N. W. 25 St., Miami, Fla., CA. **$733,834**, HIGH SCHOOL addn., TITUSVILLE, FLA. Brevard Co. Bd. P. Instruction, Titusville, Fla. Bids Mar. 24. CD 3/31, under LB.

▲ **O. L. Olson Constr. Co.**, 2441 Times St., Houston, Tex. CA **$2,500,000**. gasoline PLANT, near PARADIS, LA. The Texas Co., Texas Bldg., Houston, Tex. CD 3/25.

▲ **Co-operative Mills, Inc.**, c/o A. E. Baxter Eng. Co., engr., 900 Electric Bldg., Buffalo, N. Y. rejected bids Mar. 5, feed mill, warehouse, office, storage elevator, railroad tracks, HENDERSON, KY. Est. **$1,500,000**. CD 2/26.

▲ **Harmon Constr. Co.**, 100 S. Indiana St., Oklahoma City, Okla., LB **$1,349,897**, CHEMISTRY-PHYSIOLOGY BLDG. at University of Tennessee Medical School, MEMPHIS, TENN. University of Tennessee, Knoxville, Tenn. Bids Mar. 31. CD 2/25.

▲ **W. F. Holt & Sons Constr. Co.**, 1531 Demonnbreun St., Nashville, Tenn., CA. **$1,083,672**, brick, concrete, steel Hillsboro HIGH SCHOOL, NASHVILLE, TENN. Davidson Co. Bd. Educ., Court House, Nashville, Tenn. Bids Apr. 2. CD 3/10.

† **Karl Koch Erecting Co., Inc.**, 362 Casanova St., New York, N. Y., CA. **$500,000**, erection of steel on new RADIATION RESEARCH FACILITY to be used by Oak Ridge National Laboratory, OAK RIDGE, TENN. U. S. Atomic Energy Comn., Oak Ridge, Tenn. Awarded Apr. 1. CD 8/12/48.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
April 22, 28 Michigan — May 12 Ohio
STREETS AND ROADS
April 22, 28 Michigan — May 12 Ohio

BIDS ASKED—BUILDINGS

Ill., Huntley—SCHOOL—B.A. 5/4—School District No. 158, Huntley, 1 story, brick, stone high and grade school, $400,000. Leroy W. Thompson, 355 Congden Ave. Elgin, archt. CD 8/10/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

F. F. & Y. Building Service, Inc., 319 E. Town St., Columbus, O., CA **$626,640**, base supply warehouse incl. sprinkler sys. for fire protection and utilities; **Henry A. Justus**, 4049 E. Livingston Ave., Columbus, O., CA. **$191,048**, air installation office warehouse, Lockbourne Air Force Base, Serial No. ENG 46-022-53-29, COLUMBUS, O. U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va. Bids Jan. 23. CD 1/30, under LB.

▲ **WISCONSIN**—State Hy. Comn., State Hy. Office Bldg., Madison,

Koch Constr. Co., 239 W. Center St., Milwaukee, Wis., LB. **$514,597**, Contract 1, c. conc. 7.292 mi. The South County Line-Old U.S.H. 41 Road, U.S. Hy. 41, F 03-1 (11), Fond du Lac Co.;

J. R. Griffith Co., 1500 9 St., Racine, Wis., LB. **$761,353**. Contract 1, c. conc. 5.263 mi. The Kenliswille-North County Line (South Section) Road, U.S. Hy. 141, F 01-3 (17), Ozaukee Co.;

Jos. D. Bonness, 1409 N. 27 St., Milwaukee, Wis., LB. **$752,890**, Contract 1, c. conc. 4.697 mi. The Neelsville-North County Line (North Section) and South County Line-Cedar Grove Roads, U.S. Hy. 141, Proj. F 01-3 (18), Ozaukee and Sheboygan Counties;

R. R. Birdsall & Sons Co., Racine, Wis., LB. **$441,431**, Contract 1, c. conc. 3.641 mi. The Milwaukee Co. Line-Washington Co. Line Rd., U.S. Hy. 41, F 03-1 (35), Waukesha Co.;

Rein & Schultz, 119 E. Washington Ave., Madison, Wis., LB. **$543,796**, Contract 1, b. conc. 17.2 mi. Sauk-City-Middleton Rd., U.S. Hy. 12, T 04-2 (10), Dane Co.;

Hartong & Co., La Grange Park, Ill., LB. **$63,476**, Contract 2, b. conc. 1.252 mi. Madison, Cherry, Jefferson and Maple Sts. (City of Lancaster) and Spring and Cobb Sts. (Village of Highland); U.S. Hy. 61 and S.T. Hys. 35, 80, and 81, T 08-1 (9), and T 0208 (4), Grant and Iowa Counties. Bids Apr. 3. CD 3/18.

▲ MICHIGAN—State Hy. Dpt., 222 Townsend St., Lansing, Zone 13,
Ray Sablain Inc., 2827 S. Cedar St., Lansing, Mich. LB $475,633. 22 ft. b. conc. 5.73 mi. M-19, F 77-40 C6, St. Clair Co.;
Mid-America Engineering Corp., 4922 Dempster St., Skokie, Ill., LB $478,819, b. conc., wid'n., 18.14 mi. M-21 M-50 and US-16 bypass, M 41-10 C7-R, M 41-30, etc., Kent and Ottawa Counties;
Ann Arbor Constr. Co., 221 Felch St., Ann Arbor, Mich. LB $190,666. bit. aggregate surf; conc. surf. 11.812 mi. county roads, M 72-19 C4-R, Roscommon and Crawford Counties;
Cooke Contg. Co., 1116 Penobscot Bldg., Detroit, Mich. LB $279,684. b. conc. 4 mi. M-53, M 82-12 C9-U, Wayne Co.;
Detroit Asphalt Paving Co., 432 Lafayette St., Detroit, Mich. LB $91,898. 22 ft., 42 ft. c. conc. surf. course 4.07 mi. Allen and Pelham Rds., CS 82-107 C2, Wayne Co.;
A. S. Leffler Gravel Co., Davison, Mich. LB $120,562. 21 ft. aggregate surf. course 5.25 mi. Genesee Rd., CS 44-7, C2, Lapeer Co.;
Harry Pickitt, Allegan, Mich. LB $134,186. 20 ft. aggregate surf. course, 20 ft. non-skid surf. tr. 3.55 mi. county road, CS 3-50 C1, Allegan Co.;
Toth Constr. Co., E. Manahan St., Muskegon Heights, Mich. LB $178,722. 12 ft. aggregate base course, widen, placing concrete curbs and 44 ft. b. conc. surf. course 2.046 mi. Sherman Blvd., CS 61-49 C2, Muskegon Co.;
Julius Porath & Son, 432 Lafayette Bldg., Detroit, Mich. LB $196,941. 22 ft. c. conc. 2.3 mi. Edward N. Hines Dr., CS 82-187 C2 B, Wayne Co.;
Wright Constr. Co., Williamston, Mich. LB $293,053. b. conc. 13.391 mi. US-23, M 25-11 C7 and M 25-32 C2, Genesee Co.;
Carl Goodwin & Son, Allegan, Mich. LB $171,821 dual c. conc. 0.586 mi. US-12, M 11-78 C1-U, Berrien Co.;
Carl Goodwin & Sons, Allegan, Mich. and Louis Garavaglia, 24240 Mound St., Center Line, Mich. LB $438,496. b. conc. 3.906 mi. US-131 relocation from 0.3 mi. south of proposed intersection with M-60, F 78-27 C1, M 78-27 C2-U, St. Joseph Co. CD 3/17, 3/25 and 3/26.
▲† General Electric Co., 700 Antoinet St., Detroit, Mich. CA $1,233,396. Contr. Items 1 to 8, 11 to 15 inclusive;
Buffalo Forge Co., 490 Broadway, Buffalo, N. Y. CA, $101,960. Contr. 9, testing facility, incl. equip., Detroit Arsenal, Center Line DETROIT, MICH. U. S. Eng., 1900 Cadillac Tower, Detroit 26, Mich. Bids Feb. 12. CD 1/26.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Midwest Piping & Supply Co., Inc., 1450 S. 2 St., St. Louis, Mo., CA. Est. $5,000,000. fabricate and install piping for five 200,000 kw. generating units at Kyger Creek POWER PLANT, CHESHIRE, O. Ohio Valley Electric Corp., 30 Church St., New York 8, N. Y. CD 2/9, under CA.
Vincent Kroeger, 3730 Feldkamp Rd., Bridgetown, O. Owner Builds. $700,000. 45 one-family, brick, bsmnt. units, HOUSING, west side of Jessup Rd., north of Vogel Rd., CINCINNATI, O. Charles Bonfield, 4953 Shirley Pl., Cincinnati, O., engr. Awarded Apr. 6.
▲ Marvin Helf, Inc., 10001 Carnegie Ave., Cleveland, O. Owner Builds. $6,000,000. 275 frame, ranch-type HOUSES, comprising Lyndhurst Meadows, LYNDHURST (Br. Cleveland) O.
▲† George Koch Sons', Inc., 10 S. 11th Ave., Evansville, Ind., CA. Est. $30,000,000. sheet metal constr. work, incl. installing all sheet metal and allied work such as heating and ventilating sys., process and pipe enclosures, etc., for GASEOUS DIFFUSION PLANT, (Subcontractor under Peter Kiewit Sons' Co., P.O. Box 268, Portsmouth, O.) for Atomic Energy Comm., 1901 Constitution Ave. N.W., Wash. 25, D. C. PIKETON and WAKEFIELD, O. CD 8/13, under CA.
▲ Berke-Salman Constr. Co., 401 S. State St., Indianapolis, Ind. Owner Builds. $3,500,000. 150 HOMES, Northside District, INDIANAPOLIS, IND. Harry H. Wolner, Architects Bldg., Indianapolis, Ind., archt.
▲ Dravo Corp., Dravo Bldg., Pittsburgh, Pa., CA fabricating for 2 units;
Benjamin F. Shaw Co., 2 and Lombard Sts., Wilmington, Del., CA installing piping for six 200,000 kw. units and fabricating piping for 4 units at Clifty Creek POWER PLANT, MADISON, IND. Indiana-Kentucky Electric Co., 30 Church St., New York, N. Y. Est. $6,000,000. CD 2/9/53, under CA.
† Repp & Mundt, 1604 Cottage Ave., Columbus, Ind. CA $504,642. renovating, addns. to present FACILITIES, Jefferson Proving Grounds, MADISON, IND. U. S. Eng., 830 W. Broadway, Louisville, Ky. Bids Mar. 31. CD 4/6, under LB.
Lee Constr. Co., 127 N. Dearborn St., Chicago, 2, Ill., CA, $650,000, FACTORY and OFFICE, paving at 2931 N. Campbell St., CHICAGO, ILL. Advance Transformer Co., 1122 W. Catalpa Ave., Chicago, Ill. H. L. Nachman, 179 W. Washington St., Chicago, Zone 2, mech. engr. Awarded Apr. 3. CD 3/10.
Kurtz Building Co., Box 244, Ann Arbor, Mich. CA $426,811. 3 deck concrete, steel auto parking structure, ANN ARBOR, MICH. City, F. J. Looker, city clk., Ann Arbor, Mich. Bids Mar. 18. CD 3/5.
R. C. Hendrick & Son Constr. Co., Bay City, Mich. CA $479,157. general contract, 3 story high SCHOOL, BAY CITY, MICH. St. James R. C. Parish, Bay City, Mich. CD 4/6.
Barnes Constr. Co., 1310 Wallen St. S.W., Grand Rapids, Mich. CA $477,370. 2 story, bsmnt., brick, steel Palmer Elementary SCHOOL, GRAND RAPIDS, MICH. City, Bd. Educ., 143 Bostwick St. N.E., Grand Rapids, Mich. Bids Feb. 24. CD 2/4.
▲ Practical Home Builders, 13440 W. Seven Mile Rd., Detroit, Mich. CA. Est. $1,000,000. brick, glass, tile SHOPPING CENTER, incl. store group, Coolidge and Nine Mile Rds., OAK PARK, MICH. Schostak & Co., 3415 Cadillac Tower, Detroit, Mich. CD 9/12.
Rose-Hill Building Co., 13324 West Seven Mile Rd., Detroit, Mich. CA. Est. $700,000. brick, ranch HOMES DEVELOPMENT, Clinton, Myron, Howe and Gertrude Sts., WAYNE, MICH. Rose-Hill Homes, Inc., 13324 W. Seven Mile Rd., Detroit, Mich.

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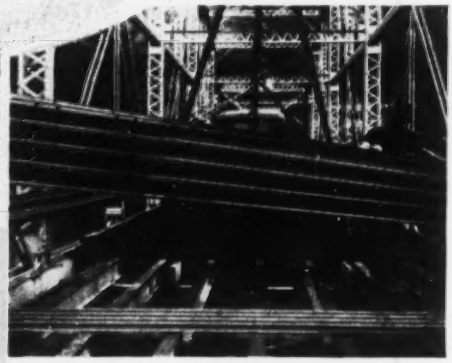

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WOOSTER, OHIO
PRODUCTS Hollow Metal Doors • Prefabricated Metal Buildings • Window Wells
Highway Guard Rail • Bridge Flooring • Corrugated Metal Pipe

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
STREETS AND ROADS
April 24 Minnesota

BIDS ASKED—BUILDINGS

N. D., Bismarck—OFFICE—B.A. 4/22—Provident Life Insurance Co., 2nd and Broadway, office. $500,000. Holabird, Root & Burgee, 180 N. Wabash St., Chicago, Ill., archts. CD 3/24.
▲ Tex., Houston—PLANT, etc.—Bids Asked—Hughes Tool Co., 5425 Polk St., Part 1, general plant unit for mfg. oil well drilling bits, $750,000; Part 3, general repair shop, $300,000. CD 2/19.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ MISSOURI—State Hy. Comn., Jefferson City,
Guy H. James Constr. Co., First National Bldg., Oklahoma City, Okla., Condon-Cunningham Co., 4229 Lafayette St., Omaha, Neb., and Peter Kiewit Sons Co., 1024 Omaha Natl. Bank Bldg., Omaha, Neb. LB. $1,430,808. substructure and main span piers and 2 bents south of River, Cole and Callaway Counties;
Porter-DeWitt Constr. Co., inc., Dalton Bldg., Poplar Bluff, Mo., and Cameron Joyce Co., 19 S. 7 St., Keokuk, Ia. LB $126,147. two 65 ft., one 80 ft. continuous I-beam spans, Sta. 921 plus 60, St. Charles Co.; LB $132,551, two 65 ft. one 80 ft. continuous I-beam spans Sta. 921 plus 30, St. Charles Co.;
Forcum-James Co., Dyersburg, Tenn. LB $174,576. one 180 steel truss, one 77 ft., two 61 ft., two 39 ft. I-beam spans, Taney Co.;
M. E. Gilliog, Monett, Mo. LB $91,094. one 50 ft., 79 ft., 63 ft. continuous I-beam spans St. 1027 plus 85, Phelps Co.; LB $63,063. one 39 ft., two 75 ft. continuous I-beam spans Sta. 997 plus 91, Phelps Co.;
Stupp Bros. Bridge & Iron Co., 3800 Weber Rd., St. Louis, Mo. LB $2,030,085. superstructure main span south approach span Sta. 14 plus 35, Cole and Callaway Counties;

Pacific Bridge Co., 333 Kearny St., San Francisco, Calif. LB $928,503, north approach 12 bents, 1 abutment on steel piles, Sta. 14 plus 35, Cole and Callaway Counties. Bids Apr. 6. CD 3/18 and 2/27.

▲ MISSOURI—State Hy. Comn. Jefferson City.

Porter-DeWitt Constr. Co., Inc., Dalton Bldg., Poplar Bluff, Mo., and **Cameron Joyce & Co.,** 19 S 7 St., Keokuk, Ia. LB $476,393, 24 ft. c. conc. 3.942 mi. St. Charles Co.; LB $728,244, b. conc. 3.165 mi. St. Charles Co.;

M. E. Gillioz, Monett, Mo. LB $169,496, c. conc. 1.541 mi. Phelps Co.;

R. G. Aldridge, 1610 Nebraska St., Kansas City, Kan. LB $1,383,358, dual 24 ft. b. conc. 4.922 mi. Phelps Co.;

Forcum-James Co., Dyersburg, Tenn. LB $90,017, granular surf. 0.646 mi. Taney Co. Bids Apr. 6. CD 3/18.

▲ **Clarkson Constr. Co.,** 4133 Gardner St., Kansas City, Mo. and **Storms-Frew Constr. Co.,** 6601 E. 37 St., Kansas City, Mo. CA $1,113,054, grading, earthwork 3. mi. and Paseo Bridge, KANSAS CITY, MO. Jackson and Clay Counties, Court House, Kansas City, Mo. CD 4/1, under LB.

▲ ARKANSAS—State Hy. Dpt., Little Rock.

Bucton Constr. Co., Inc., Hazen, Ark., CA, $131,870 base course, blacktop 8.129 mi. Holly Grove—Hy. 20 connection Hy. 86 and 20, Monroe Co.; CA $127,374 grav. course, 2 steel bridges 3.49 mi. Mount Ida-Washita Rd. Hy. 27, Montgomery, Co.; CA, $280,276, grav. base, blacktop 1.319 mi. Mount Ida-East Road, Hy. 270, Montgomery Co.;

Ben M. Hogan & Co., 1100 Fairview St., Little Rock, Ark., CA, $971,974, c-conc. 13.19 mi. Marion-Turrell Rd., Hy. 61 Crittenden Co.; CA, $176,648, grav. base and blacktop 10.504 mi. Manila-South Road, Hy. 77, Mississippi Co.;

Linwood Smith, Lake Village, Ark., CA, $88,640 blacktop 9.146 mi. Rohwer-Watson Rd. Hy. 1, Desha Co.;

T. L. James & Co., Ruston, La., CA, $544,578 c. conc. 8.069 mi. Paup's Spur-Northeast Rd. Hy. 67, Miller Co.;

D. F. Jones Constr. Co., Rector Bldg., Little Rock, Ark., CA, $99,154, blacktop 12.561 mi. Pleasant Grove-Locust Grove Rd. Hy. Stone and Independence Counties;

Northwest Asphalt Co., Fayetteville, Ark, CA, $78,065 crushed stone base and blacktop 7.186 mi. Cincinnati-North Road, Hy. 59, Washington Co.;

Reynolds & Williams, 115 N. Spring St., Little Rock, Ark., CA, $362,290, blacktop 14.383 mi. Humnoke-East and West Road, Hy. 30, Lonoke, Prairie and Arkansas Counties Grand total $2,860,767. CD 5/1.

▲† **Standard Dredging Corp.,** 80 Broad St., New York, N. Y. CA $3,081,360. 24,000,000 cu. yd. channel excav., on right bank of St. Francis River St. Francis and Lee Counties, Inv. 53-117, ARKANSAS. U. S. Eng., P.O. Box 97, Memphis 1, Tenn. Bids 2/5 rejected. CD 2/11 under LB.

▲† **Farnsworth & Chambers Co., Inc.,** Box 74, Houston, Tex., LB. $6,455,668, est. $8,511,671, Alt. $6,456,700, est. $8,525,060, 3 story bldg. and 2 story laboratory; LB. $6,103,186, est. $8,124,978, building only;

General Contractors, 3001 Pratt St., Omaha, Neb. LB $384,218, est. $386,693, alt. $345,706, est. $400,000. exterior work at Strategic Air Command Control Center, Offutt Air Force Base, Inv. 25-066-53-66, FORT CROOK, NEB. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Apr. 7. CD 2/11.

† **H. B. Zachry Co., Constr. Div.,** Box 2570, San Antonio, Tex., CA $549,545, parallel northwest-southeast runways and connecting taxiways, Laughlin Air Force Base, Inv. No. Eng-41-243-53-114, DEL RIO, TEX. U. S. Eng., Box 1229, Galveston, Tex. Bids Mar. 20. CD 3/26, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Gamble Constr. Co., 804 Pine St., St. Louis 1, Mo. CA Est. $650,000. 1 story, 280 x 540 ft., brick, steel, concrete, metal sash and door mfg. PLANT and WAREHOUSE south side, 8900 block Page Ave., PAGEDALE (ST. LOUIS 14 P.O.), MO. Huttig Sash & Door Co., 1218 S. Vandeventer Ave., St. Louis, Mo. Cay G. Weinel, 3827 W. Pine Blvd., St., Louis 8, Mo., archt. Bids Mar. 5. CD 10/15.

Metcalfe Constr. Co., Omaha Natl. Bank Bldg., Omaha, Neb., 10 story APARTMENT, 48 and California Sts., OMAHA, NEB. $650,000. Application for re-zoning withdrawn. Project abandoned. CD 4/3, under CA.

Eitze-Kitchens Constr. Co., Guadalupe and W. 45 St., Austin, Tex., CA $590,000. 3 story 36-bed HOSPITAL, BRENHAM, TEX. St. Francis Hospital, Brenham, Tex. Bids Mar. 3. CD 2/10.

James Stewart & Co., 800 Employers Insurance Bldg., Dallas, Tex., CA. $796,940, OFFICE alterations, addns., DALLAS, TEX. Chance-Vought Aircraft, Box 5907, Dallas, Tex. CD 3/31.

▲ **Southwest Fertilizer & Chemical Co.,** Clinf, El Paso, Tex., CA. $1,150,000, fertilizer mfg. PLANT, EL PASO, TEX. Standard Oil Co. of Texas, Womble Blvd., El Paso, Tex. CD 7/6/51.

James T. Taylor & Sons, Box 225, Fort Worth, Tex., CA. $543,044, Meadowbrook Junior HIGH SCHOOL, FORT WORTH, TEX. Fort Worth Independent School Dist., 407 E. Weatherford St., Fort Worth, Tex., Bids Apr. 7. CD 3/20.

▲ **Produce Building Corp. of Houston and Morris Kagan,** 821 Commerce St., Houston, Tex. Owner Builds. J. C. Curlee, Builder, 6648 Main St., Houston, Tex., in charge of constr. $2,650,000, PRODUCE TERMINAL, HOUSTON, TEX. CD 1/27.

Boyer & Sowda, 3400 N. MacGregor St., Houston, Tex. Purchase and Hire. $405,000, Unit 5, 12 one and two story masonry DWELLINGS, HOUSTON, TEX. CD 12/17.

Belfort Corp., c/o Earl Gregg, c/o E. S. & Robert M. Atkinson, engrs., 1st Natl. Bank Bldg., Houston, Tex. Purchase and Hire. $435,000, twenty-two 2 story masonry DWELLINGS, HOUSTON, TEX. CD 12/29.

Mosher Steel Co., 3910 Washington St., Houston, Tex., CA. $865,000. furnishing, erecting Class "A" structural steel and fdn. excav. for 21 story OFFICE and BANK, HOUSTON, TEX. South Texas National Bank Bldg., 213 Main St., Houston, Tex. Kenneth Franzheim, 2402 Crawford St., Houston, Tex., archt. Howard, Johnson & Kelley, Scanlan Bldg., Houston, Tex., engrs. CD 11/24.

Swigert Constr. Co., 722 Speight St., Waco, Tex., LB. $674,798, est. $750,000. Tidwell BIBLE BLDG., WACO, TEX., Baylor University, c/o W. R. White, ores., Waco, Tex. Bids Apr. 1. CD 3/2.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES
April 29 California

STREETS AND ROADS
April 29, 30 California

BIDS ASKED—BUILDINGS

Wash., Seattle—SCHOOL—B.A. 4/28—Highline School Dist. 401, 253 S. 125 St., 16,000 sq. ft. masonry shop and 12,400 sq. ft. masonry Highline School addns. $411,900. Mallis & DeHart, 631 Lyon Bldg., Zone 4, archts. CD 9/5.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **U. S. Eng.,** 751 S. Figueroa St., Los Angeles, Calif., rejected bids Mar. 27, runway and taxiway exten., Yuma County Airport, ENG-04-353-53-110, YUMA, ARIZ. $400,000 CD 2/20.

† **H. P. Adams Constr. Co.,** 901 Orange Ave., Yuma, Ariz., CA, $426,866, dormitories, mess bldg., B.O.Q. and warehouse, Yuma County Airport, ENG-04-353-53-128, YUMA, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 31, CD 3/11.

† **Galland Electric Co.,** 9308 State St., South Gate, Calif., CA $418,688, Schedule D, electrical distr. sys.;

Grinnell Co. of The Pacific, 520 Mateo St., Los Angeles, Calif., CA, $78,846, Schedule E, fire alarm and sprinklers, Ordnance Area, ENG 04-353-53-90, LAS VEGAS, NEV. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., Bids Mar. 18. CD 12/10.

† **Brown Boveri Corp.,** 19 Rector St., New York, N. Y., LB, $437,630, Schedule A;

I-T-E Circuit Breaker Co., 19 and Hamilton Sts., Phila., Pa., LB, $685,988, Schedule B, 15-kv bus breakers and generator grounding equip. Chief Joseph Dam, Inv. 53-50, WASHINGTON U. S. Eng. 4735 E. Marginal Way, Seattle 4, Wash. Bids Apr. 3.

† **Malvern & Nicklas,** 3411½ N. La Brea St., Los Angeles, Calif., CA, $677,706, AIO shop at Edwards Air Force Base, ENG-04-353-53-108, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 1, awarded Apr. 2.

Barrett & Hilp, 918 Harrison St., San Francisco, Calif., CA. $439,000, Hangar, San Francisco Airport, SAN FRANCISCO, CALIF. United Air Lines, Post and Powell Sts., San Francisco, Calif. H. J. Brunnier, Sharon Bldg., San Francisco, Calif., engr. Awarded Apr. 1.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Blue Diamond Corp.,** 1650 S. Alameda St., Los Angeles, Calif., Owner Builds. $2,250,000, incl. equip. PLANT for mfg. plastic board and lath, BLUE DIAMOND, NEV.

Swinerton & Walberg, 1723 Webster St., Oakland, Calif., CA. $509,000, general contract Chemical LABORATORY Bldg. 70, Radiation Laboratory, BERKELEY, CALIF. University of California, Administration Bldg., Berkeley, Calif. Bids Mar. 20. Awarded March 31. CD 3/31, under LB.

Parker, Steffan & Pierce, 135 S. Park St., San Francisco, Calif., CA. $873,800, SCHOOL of PUBLIC HEALTH, BERKELEY, CALIF. University of California, Administration Bldg., Berkeley, Calif. Bids Mar. 17, awarded Mar. 30. CD 3/24, under LB.

M. J. Brock & Sons, 2894 Rowena Ave., Los Angeles, Calif., LB, $402,765, Inmate COTTAGE Unit 4-C, California Institute for Women, CORONA, CALIF. State Div. Architecture, 217 W. First St. Los Angeles, Calif.

Stolte Inc., 8451 San Leandro St., Oakland, Calif., LB. $439,980, BANK, REDDING, CALIF. Anglo California National Bank, c/o Harry J. Devine, archt., 1012 J St., Sacramento, Calif. Bids Mar. 31. CD 4/1.

MacDonald Eng. Co., 885 Bryant St., San Francisco, Calif., CA, $850,000, rice DRYING and STORAGE BLDG. SACRAMENTO, CALIF. Farmers Rice Growers Cooperative, Front and P Sts., Sacramento, Calif. Awarded Mar. 26 CD 12/30.

Cahill Bros., 206 Sansome St., San Francisco, Calif., CA. $460,000, beer botting PLANT, Harrison and Juniper Sts., SAN FRANCISCO, CALIF. San Francisco Brewing Corp., 470 Tenth St., San Francisco, Calif. Awarded Apr. 2.

Jos. Pettancourt, 1015 San Mateo Ave., San Bruno, Calif., CA. $475,000 Bayview St. SCHOOL, SAN PABLO, CALIF. San Pablo School District, San Pablo, Calif. Awarded Apr. 2. CD 10/8.

Imperial Homes No. 18, Guardian Homes, Inc., 342 Ardmore Ave., Hermosa Beach, Calif. Owner Builds. $470,000, 47 frame, stucco DWELLINGS, 168 St., Kristin and Casimer Ave., TORRANCE, CALIF.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
STREETS AND ROADS
April 20, 23, British Columbia

BIDS ASKED—BUILDINGS

▲ **Ont., Toronto**—OFFICE—B.A. 4/23—Independent Order of Foresters, Temple Bldg., Toronto, 6 story, 17x30 ft., rein.-con., brick, stone office, $5,000,000. Wallace, Carruthers & Assoc., Ltd., 35 Isabella St., engrs. Marani & Morris, 1250 Bay St., archts. CD 8/17/51.

Ont., London—WAREHOUSE—Bids Asked—General Motor Products of Canada, 127 Queens Ave., 1 story, 200x300 ft., brick, steel, concrete warehouse, $800,000. Allward & Gouinlock, 57 Bloor St. W., **Toronto, Ont.,** archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **BRITISH COLUMBIA**—B. C. Government, Douglas Bldg., Victoria.

P. F. Law Constr. Co., Ltd., P.O. Box 365, Fruitvale, B. C. LB, $201,183, reconstr. 3.22 mi. Boundary Falls-Greenwood Section, Southern Trans-Provincial Hy.;

Highway Construction Co., 789 W. Pender St., Vancouver B. C., LB, $796,878, reconstr. 2.95 mi. Jackas Mountain-Kanaka Creek Section, Trans-Canada Highway;

Emil Anderson Contr. Co., Hope, B. C., LB, $404,780. reconstr. 4.1 mi. Ladysmith-Nanaimo Section, Trans-Canada Hy.;

Storms Contg., Ltd., 550 Burrad St., Vancouver, B. C., LB, $68,688, reconstr. 106 mi. of Okanagan Falls-Waterman Hill Section, Southern Transprovincial Hy. CD 3/20;

General Constr. Co., Ltd., Gramville Island, Vancouver, B. C., LB, $143,480, bit. surf. Victoria-Patrica Bay Hy. CD 3/18. Bids Apr. 1.

G. W. Ledingham & Co., Ltd., 1025 W. 77 Ave., Vancouver, B. C., CA, $447,463, Installing 38,300 ft. 32 in. and 39 in. inside diam. welded steel pipe, Oak Bay, VICTORIA, B. C. Greater Victoria Water District, 685 Yates St., Victoria, B. C. Bids Mar. 25, awarded Mar. 31. CD 3/19.

▲ **Standard Dredging Co. Ltd.,** East St. John, N. B. CA. $1,893,005. exten. Piers 2 and 3 at St. John Harbor, ST. JOHN, N. B. National Harbors Bd., Parliament Bldg., Ottawa, Ont. Bids Feb. 27, awarded Mar. 31. CD 3/11.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **F. A. Branscombe,** 606 Queen St., Niagara Falls, Ont. Owner Builds. $1,230,000. 190 DWELLINGS on 50 acre site, just north of Bertie St., FORT ERIE, ONT. CD 4/9.

E. P. A. Construction Co., Ltd., Clark Side Rd., London, Ont. CA, $818,000. 100 HOUSING units, Smale Subdivision, SAULT STE. MARIE, ONT. Central Mortgage & Housing Corp., 393 Fisher St., North Bay, Ont. Bids Mar. 24, awarded Apr. 2.

Jannison & Scott, 35 Cedar St., Sault Ste. Marie, Ont., CA, $604,000, 5 story, 44x175 ft., steel, brick HOSPITAL addn., concrete floors, SAULT STE. MARIE, ONT. General Hospital, 941 Queen St. E., Sault Ste. Marie, Ont. Bids Mar. 16 awarded Mar. 30. CD 3/12.

Principal Investments Ltd., 67 Richmond St. W., Toronto, Ont. Owner Builds. $750,000. 7 story, 80x125 ft., steel, glass and brick office, York and Richmond Sts., TORONTO, ONT.

H. Charest & Brother, c/o City Bldg. Permit Office, City Hall, Montreal, Que. Owner Builds. $750,000. 60 BUNGALOWS, MONTREAL, QUE.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

▲† **ALASKA**—B.A. 4/30—Bureau P. Rds., Dpt. Interior, Juneau,
impry. Tongass Hy. near Ketchikan, Proj. 1-C4, D7, E5, H2. $1,000,000. CD 12/1, under LB.

† **Alaska, Ketchikan**—B.A. 4/30—P. Wks., Dpt. Interior, Juneau, sewers in West End, Proj. 50-A-83. $740,000. Plans deposit $25. L. Hubbard, city engr. CD 2/20.

▲† **Alaska, Ketchikan**—B.A. 4/30—Alaska P. Wks., Dpt. Interior, Juneau, waterfront arterial consisting of 759 ft. rein.-con. viaduct, tunnel and seawall. $1,819,000. Plans deposit $25. R. M. Murray, 908 Seventh St., Seattle, Wash. engr. CD 7/9, under LB.

BIDS ASKED—BUILDINGS

▲† **Alaska, Ketchikan**—HIGH SCHOOL—B.A. 5/14—Alaska P. Wks., Dpt. Interior, Juneau, 1 and 2 story, 88,500 sq. ft., steel frame high school, concrete fdns. $1,985,000. Plans deposit $50. Johnson & Botesch, 1st Natl. Bank Bldg., Everett, Wash., archts.

HEAVY CONSTRUCTION

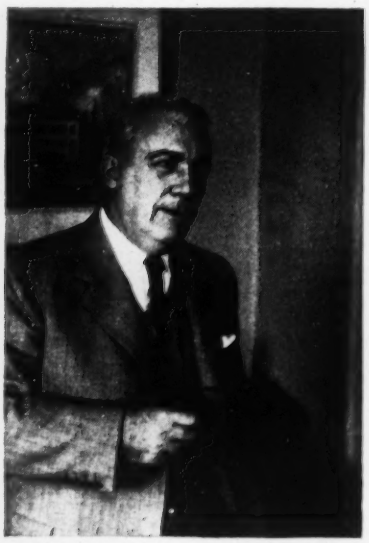
LOW BIDS AND CONTRACTS

▲† **Patti MacDonald, Wyatt & Thoraugard,** 1310 S. Grand St., St. Louis, Mo., LB $11,514,007, Part 1, power house constr.;

Newbery Electric Corp., 1038 Venice St., Los Angeles, Calif., LB $911,398, Part 2, power tie line, Inv. 53-81, Elmendorf Air Force Base, ALASKA, U. S. Eng., Evergreen Hall, 3013 Arcade Bldg., Seattle 1, Wash. Bids Mar. 31. CD 4/6, under LB.

(Proposed Advertisements see pp. 161 to 163)

NUCLEAR LABORATORY for a construction company: William Collins, of Kidde Constructors, has just started an atomic lab at Garden City, N. Y.



ATOMIC ENERGY already can generate electric power. The Kidde lab is one of those trying to make it compete with coal.

An engineer-builder looks ahead into the age of atomic power

The development of atomic power for military use already has meant billions of dollars of business to the construction industry. But that's only the start of what could happen if Congress allows private industry to use uranium for commercial power.

That event may not be many months away. The Atomic Energy Commission will ask Congress late this month or early in May to change the McMahon Act of 1946 so that private companies could use uranium, if they find it makes economic sense.

Atomic power plants already exist, on an experimental basis. An atom-powered submarine is scheduled within the year, and later an atom-powered aircraft carrier.

These power plants won't be economical from a commercial point of view. But a good many people are convinced that eventually the atom will be able to compete with coal and oil as a means of generating electricity. Some guess it will take another five years, others say 10 or perhaps longer. If—and when—this happens it could mean a lot of new construction.

• **Private uses**—Private industry has been looking into the uses of atomic power for several years. Monsanto Chemical Co. started the ball rolling in 1950. With public utility Union Electric Co. of Missouri, it began studying the possibilities of generating power from the heat created by an atomic reactor—the device that converts uranium into plutonium, the stuff they put in bombs.

Several other industrial "teams" also have been checking into this potential source of commercial power: Detroit Edison Co. and Dow Chemical Co.; Pacific Gas & Electric Co. and one of the country's top engineering outfits, Bechtel Corp.; Commonwealth Edison Co. and Public Service Co. of Northern Illinois. The idea is that the private companies would operate reactors to provide power, and sell the byproduct plutonium to AEC.

These teams have already given AEC their reports. With AEC's approval, the Detroit Edison-Dow team is going ahead with further studies. The rumor is that this group is sufficiently convinced of the possibilities that it's willing to build its own reactor without government assistance. Meanwhile, two other outfits, Pioneer Service & Engineering Co. and Foster Wheeler Corp. have started looking into the same possibility.

• **Consulting service**—The hard-headed executives of these companies aren't the only ones who have gotten excited over the commercial possibilities of atomic power. Another engineer-

STEAM from the atom is first step, Collins believes. He thinks some day we can convert atomic energy directly into power.

ATOM POWER could be used first to develop resources of countries where coal cost now is high, Collins points out.

"MUCH construction today is a result of work started in research labs 10 or even 15 years ago."

builder has set up a laboratory to provide a consulting service to private industry in the atomic age. Walter Kidde Constructors, Inc., along with its affiliated company Walter Kidde & Co., Inc. (maker of fire-protection systems and pneumatic devices) has started Walter Kidde Nuclear Laboratories, Inc.

William Collins (cover), president of Kidde Constructors, believes that there will be many commercial applications for atomic energy, creating a multi-billion-dollar market for industrial builders. That's why he wants to get Kidde Constructors into the act not only as builders, but as an engineering and scientific consultant.

The atomic age, Collins is sure, will provide a great opportunity for integrated companies like Kidde, which are prepared to do a complete job of design, construction, and machinery installation. He figures that will mean less competitive bidding among builders; and more negotiated contracts.

• **Atom to kilowatt**—Using atomic energy to make steam for power plants is only the first step, Collins believes. He thinks that later on it will be possible to convert atomic energy directly into electrical energy, bypassing the conventional generation process. If this occurs, overnight it will make every conventional power plant in the world obsolete.

In the more immediate future, Collins points to the vast international market that could be created for U. S. builders. In areas like Italy, South America, Australia, Africa, and even the United Kingdom, coal costs are high. Atomic reactors producing the heat for steam-generated power would be accepted in such areas more quickly than in the U. S.—assuming of course that Congress gives this overseas use of uranium a green light.

The Kidde company is starting out to get its share of this market by setting up its nuclear laboratories. The subsidiary took shape last year when arrangements were made to take over the personnel of the atomic-energy division of H. K. Ferguson Co., which had been doing work for AEC. Kidde Laboratories continues to work on these contracts in a new laboratory built a few months ago at Garden City, N. Y.

In addition to its government work, Kidde Laboratories provides an independent research and engineering service qualified to help private companies which want to explore the impact of atomic energy on the future of their business, and to see whether it's practicable to use nuclear science in current production and research.

• **Specific jobs**—Among specific jobs the laboratories can do for private companies are: use of radiation in speeding production, use of radioactive isotopes in manufacturing and processing, design of laboratories and handling facilities for radioactive materials, disposal systems, and safety precautions.

Top scientist of the group is Dr. Karl P. Cohen, who has been working in nucleonics since 1938 and who originated some of the basic ideas in producing the atom bomb. In 1948, Doctor Cohen gathered the key men in his present group to form an atomic energy division for H. K. Ferguson Co., where it did work for AEC and the military departments on design of aircraft and an atom-powered submarine. He and his group also have been working for several years on the same problem that the five industrial teams have been pursuing—a low-cost nuclear reactor to produce commercial power.

An atomic research laboratory like Kidde's doesn't come cheap. To explain why a construction company should be building one, Collins refers to the history of his company. Founder Walter Kidde started his own business in 1900, gradually built up a good-sized enterprise installing machinery in industrial plants and putting in boiler and power facilities. From that, the company went on to building entire plants.

• **Change**—But Kidde didn't just stick to building. In the 1920s, it developed a fire-detecting and extinguishing device which created so much business that in 1929 the construction and fire-extinguisher operations were split into separate companies. Now the Kidde group also includes Kidde Manufacturing Co., which makes heavy production equipment, and the

Bloomfield Tool Corp., machine-tool designer and builder.

So Collins, who has been on Kidde's construction side since 1917, is accustomed to change, and has learned to think ahead on ideas that can help the construction business. He points out: "Much of the construction we are seeing today—in such fields as petrochemicals, synthetic textiles, plastics, and antibiotics, to name only a few—is a result of work started in research laboratories 5, 10, or even 15 years ago."

"Development of a new product," he goes on to say, "often sets up a chain reaction throughout an entire segment of industry. We must recognize the total effect of new product development. First, it means a new pilot plant and then a full-scale plant for the prime producer. Second, it often means construction or expansion of as many as half a dozen plants to supply basic materials for the new process. In many cases it means expansion of power facilities. And finally, it will make competing firms re-examine their position to see what they can do to keep step with progress."

Rent controls

Senate committee votes to extend them five months

The Senate Banking Committee pulled a surprise last week when it voted 10-to-5 to accept President Eisenhower's recommendation that rent controls, which are due to expire April 30, be extended to Sept. 30. These controls cover about 5,000,000 rental units throughout the U.S.

But the extension of rent controls will face a tough fight when it comes up on the floor of the Senate. Senators John Bricker of Ohio, and Wallace F. Bennett of Utah, who were in the minority on rent-control extension, said they would fight it. Congress must act by April 30 if ceilings are to be extended.

The vote on extension was a surprise, though the President had recommended it. Previously, several committee members had indicated that rent curbs in non-critical areas would be allowed to expire April 30. This would have released about 4.3 million units in 1,400 cities over the country.

The committee vote continues rent ceilings in non-critical areas through Sept. 30 and in critical areas through April 30, 1954. The committee tightened the definition of a "critical area," which is to apply after Sept. 30.

Under this stricter definition, existence of a big new defense plant in a city won't qualify it as a critical area. Only those communities will qualify which have housing shortages caused by a "military, Atomic Energy Commission, or other government installation."

February cement figures

As of the end of February, the cement situation showed higher production, lower shipments, and improved mill stocks.

Bureau of Mines figures show February production as 17,325,000 bbl, up 5% from the same 1952 month. For the first two months of this year, production is 8% higher than 1952.

Shipments picked up seasonally in February (over 14,000,000 bbl) but they were 1% below the corresponding month last year. This is the first month since last September that this has happened.

CONSTRUCTION TRENDS

Can Malenkov deflate the boom in our construction industry by waving his peace wand? That's the top question being discussed by builders, bankers and buyers right now.

One phase of the industry that will be unaffected by the fluttering of the Red peace doves is that having to do with state and local construction. Hospitals, schools and highways must be built to meet pressing needs, and those needs will not disappear if the war clouds recede. The Federal Reserve Bank of Chicago has estimated that state and local governments have a $100-billion construction backlog.

You may find that an easing of world tensions will help this type of construction to spurt a bit. A more durable peace is almost certain to end any remaining tightness in the supply of construction materials. But you mustn't expect state and local construction to pick up sharply. Its inability to be pumped up rapidly is its main weakness when used as an anti-recession weapon.

A safe bet is that construction for the military and atomic energy programs will skid somewhat if real peace comes. As a matter of fact, even without the Kremlin peace overtures, a decline in these fields was a real possibility. The economy theme has been prominent in Washington for many months. Most congressmen appeared to think a 10% cut in defense appropriations was perfectly feasible. This estimate may be revised upwards in the light of the most recent events.

But since most construction spending is for work in progress, the cutback in federal construction will not be too drastic or abrupt. Any decline in construction outlay probably will have its most direct impact on proposed new contracts. But, remember, there is no gilt-edged guarantee that a determined effort by economy-minded legislators won't force work on some projects to grind to a halt.

The effect of Malenkov's maneuvers on residential, commercial and industrial construction is a bit harder to pin down. Conditions in these sectors of the industry track with the general business outlook. If peace brings a letdown in public expenditures as well as in private spending by industry to expand defense facilities, the nation will need increased spending from some other source to avoid some shading of its present high level prosperity.

If spending cuts induced by Malenkov's billing and cooing are not offset, the resulting slide in national income is almost certain to mean an easing in the construction of homes, factories and stores. If, however, we succeed in maintaining high level expenditures, there is no reason why construction activity in these fields should suffer. And chances are good that spending will remain high. The billions spent for research by American industry assure a steady stream of new products. And businessmen's replies to the McGraw-Hill survey on capital expenditures revealed that the desire to modernize existing capacity was going to spark high level spending in the next few years. This continuing capital outlay puts a good sturdy floor under national income.

Add it all up and you can see that there's no compelling reason why the end of the cold war need bring any real slackening in today's very satisfactory level of construction activity.

M-K president sees business drop due

Morrison-Knudsen Co., Inc., had a record construction volume of $346 million last year, but President Harry W. Morrison sees little hope of equaling this high mark again soon.

M-K netted about $5.4 million after taxes, compared with $5.3 million in 1951. Revenue from domestic construction was about $219 million, down $11 million from 1951. But foreign subsidiaries had a sharp upturn in business. They completed contracts totaling $127 million, up $45 million from the year before.

Morrison predicts that, "it is not probable that our 1953 domestic construction volume will be maintained at the record levels of 1951 and 1952." He believes that the U.S. economy is moving into a transitional period in which the construction industry will get less business from either government or private businessmen.

Morrison is of the opinion that industry has passed the peak of its present expansion program. He also believes that while in the long run the policies of the Eisenhower Administration will be healthful for all business, its moves toward checking inflation and balancing the budget are going to mean fewer government contracts will be going to the construction industry.

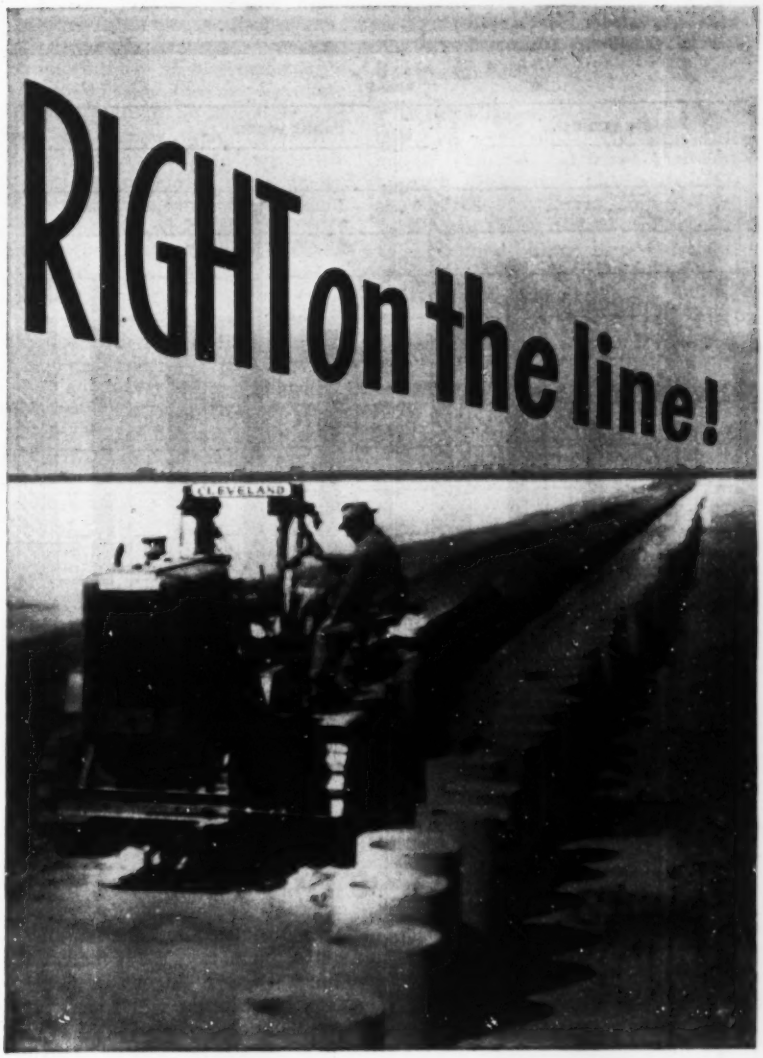
A record quarter for construction

Estimates on new construction put in place, reported last week by the departments of Commerce and Labor, show a record first-quarter volume of $7 billion, up 6% from the same period last year. The government said that this also represented a record physical volume, after allowance for higher costs.

For March alone, the gain was almost 5% above the corresponding month last year and 10% above February. Of the total March volume of $2.5 billion, $1.7 billion was in private construction, which rose" considerably more than seasonally."

Of this private construction, about $856 million was non-farm housing, which gained 12% above February. Building by public utilities was $238 million, up 16%. Private industrial building ($198 million) was up 1.5% but showed a decline of 2% from the comparable month last year.

Public construction rose 12% during March, which is less than usual at this time of year. Cause: the Administration's economy order.



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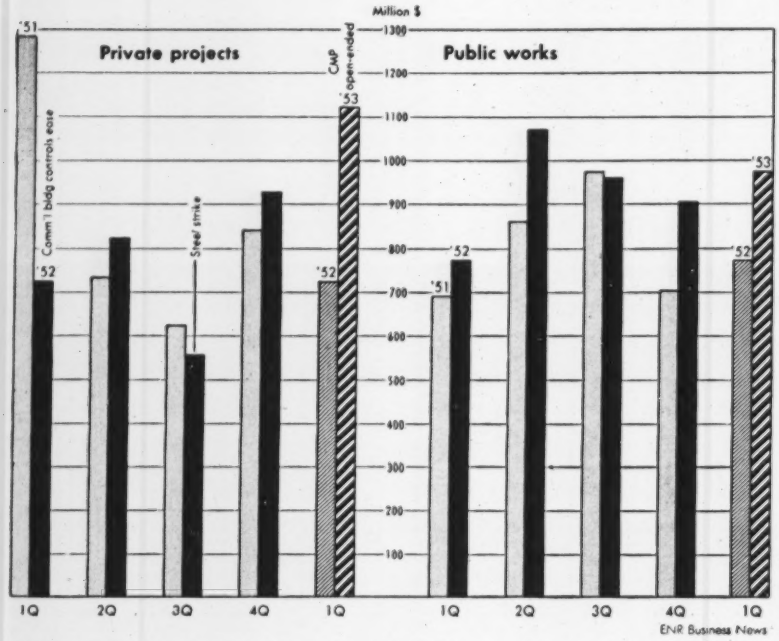


OUT OF BACKLOG INTO CONTRACTS—Work moves out faster as controls end. Based on projects moved out of ENR heavy construction backlog into contract status in each quarter.

Private work outpaces public work in moving from backlog to contract

Now that controls are off, what types of work are coming out most rapidly from ENGINEERING NEWS-RECORD's backlog of proposed work? And how long have these projects been in the backlog?

The figures show that during the nine months ended this March, 19% more private work ($2.6 billion) moved out of backlog into contract awards than in the same 9-month period of 1951-52. That was the period from the adoption of the Controlled Materials Plan in July, 1951, until controls on commercial building were first eased in March, 1952. There's less industrial construction for defense, more for the civilian economy.

Public work shows almost as much of an increase for the same period. It's up 16%, with projects costing $2.8 billion moving into contracts.

The charts (above) show comparisons on a quarterly basis for both private and public work.

All types of construction are moving out of backlog faster, except public housing and private unclassified. And the latter is expected to pick up as the year goes on.

Commercial building, private mass housing, and bridges show the biggest increases in dollar value of work moving out of the backlog. But industrial building, sewerage, highways, public buildings, earthworks and waterways, and public unclassified all show increases ranging from 10% to 28% in volume.

How long has this work been in the backlog? ENR analyzed nearly 1,100 projects, public and private, which moved into the contract award stage during February and March. It finds that most private work has been in the backlog one year or less. Most public projects have been backlogged longer, many for over two years.

Most private mass housing projects moved out of backlog within three months of the time they were proposed. About 80% were in backlog for a year or less. Out of all projects moving into contract during February and March, 14% were jobs proposed in the last half of 1951, when controls on housing were clamping down the hardest. There were only a few jobs which had been proposed moving out of backlog before that time.

Where industrial buildings were concerned, 75% had been proposed within the last year. And of these, exactly half had been reported as proposed within three months of the contract date.

This indicates a shift to industrial expansion for nondefense purposes. Very few jobs proposed in the first half of 1951—when the rush was on for new defense-plant construction—are now coming out of backlog.

In commercial building, the picture is a little different. A larger percentage (37%) of projects in this category had been in the backlog over a year before moving into contracts. Most of these were jobs proposed in 1951, when controls were tightest.

Public works projects show a much longer lag. The longest delay is in earthwork and waterways. About two-thirds of these projects moving into the contract stage during February and March had been proposed one or two years ago. Only 20% had been proposed within a year.

About 45% of the highway jobs and 41% of the bridges had been in backlog for more than two years. About one-third had been backlogged for a year or less.

Public buildings showed a shorter lag. About 53%—including housing—came out of backlog within a year. Waterworks and sewerage remain in the backlog for shorter periods than most kinds of public works.

Conditional sales

They bother distributors of construction equipment

Construction equipment distributors, even if not being hurt themselves, generally feel that contractors are overdoing the practice of leasing with option to buy.

An ENR survey of key distributors throughout the U. S. indicates that repeated warnings by the Associated Equipment Distributors have been well-timed (ENR Feb. 12, p. 60). Lease-purchase deals, which had dropped off after the war, have come back into vogue.

Conditional sales got started early in World War II, when used equipment was rented for defense work and the rent applied to later purchase of the equipment. Now, of course, new equipment is often involved.

Most distributors interviewed by ENR believe that while the practice is troublesome; it's something that has to be lived with because "the competition is doing it."

• **How they work**—How do lease-pur-

chase deals work? Terms vary, but in general the lessee has an option to buy which may be exercised in anywhere from 60 days up to four months. Usually, from 90% to 100% of his rental payments may be applied to the purchase price.

Why do contractors like to lease machinery with an option to buy, rather than to buy outright? Smaller builders, particularly, like the arrangement because it conserves cash. Down payments on purchased equipment ordinarily run somewhere around 20% to 25% but on a conditional sale, a contractor can often get his equipment by putting up only 10% at first.

This can help a lot on big jobs, where contractors have other large demands for cash. Furthermore, for bonding and bidding purposes it helps them show a more liquid balance sheet.

As a Baltimore distributor puts it: "In effect, the rental agreement allows contractors to avoid a down payment, or rather to make it in installments."

• **Problems**—But most distributors don't like conditional sales. While the equipment is being rented by the prospective buyer, the distributor has to finance it or else tie up part of his working capital. Often he calls on his bank to help with all or part of the financing. A lot of this paper is not "bankable," but most banks will accept a certain amount from dealers with whom they do a lot of business.

There are other disadvantages to the distributor in conditional sales. The distributor loses control over his equipment, since he can't be sure for some time whether the sale is actually going through. Furthermore, his profit on that sale is delayed.

This can be serious for small distributors. Says one New Orleans equipment man: "A distributor may have trouble financing the purchase of an expensive machine from the manufacturers—say a $25,000 crane. If he acquires such a piece of machinery, the best thing for him from a business standpoint would be to sell it. But say he rents it out with a purchase option attached. The contractor fiddles around for five or six months and the distributor never knows whether the machinery will be purchased. He is in a fix and is forced to resort to a finance company."

• **Straight rentals**—Most distributors, however, say they don't object to renting equipment with no purchase option attached. As they see it, such equipment generally is needed only for a short time. If it's something a contractor will use often or over a long period, he'll buy it. So straight rentals bring in money the distributor wouldn't otherwise get, particularly from smaller operators, who can afford to rent some kind of equipment for short periods which they couldn't afford to buy. Moreover, this initial contact often leads to sales of other equipment later on.

Straight rental of equipment, as contrasted with a conditional sale or outright purchase, has a tax advantage to the contractor. He can deduct rental payments as a cost of doing business. When he buys equipment, however for tax purposes, he can deduct only the cost of its annual depreciation.

At first, some contractors misunderstood the conditional sale method, figuring that they could also deduct their "rental" payments as business costs. However, equipment dealers around the country report that the Bureau of Internal Revenue has straightened contractors out on that point. When payments are made on machinery and eventually are applied toward purchase, you can't deduct them as an operating expense.

Business briefs . . .

• **Merritt-Chapman & Scott Corp.** now has $144-million backlog, according to president and board chairman Louis E. Wolfson. That's up 73% above a year ago. Dravo Corp. and its subsidiaries earned $3.1 million in 1952 on total billings of $65 million. In 1951, Dravo earned $3.7 million on billings of $63 million.

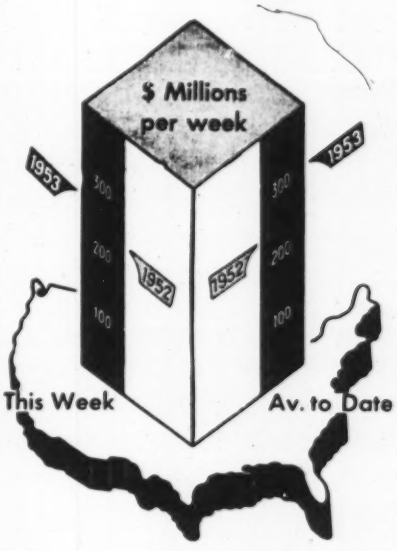
• **Maine Turnpike Authority** earned 62% more in the first quarter than in the similar 1952 period, due partly to more traffic, and partly to higher tolls. The authority plans to offer $75 million of bonds shortly to refund present debt and to extend the turnpike.

• **Philadelphia** can't intervene in a case in which New York City is asking authority to take 800 mgd of water from the Delaware River, the Supreme Court has ruled.

• **A $30-million subcontract** for sheet metal construction at the Portsmouth, Ohio, atomic energy project has been awarded to George Koch Sons', Inc., Evansville, Ind., by Peter Kiewit Sons' Co., the general contractor.

Activity This Week

As reported to ENR
(in millions of dollars)

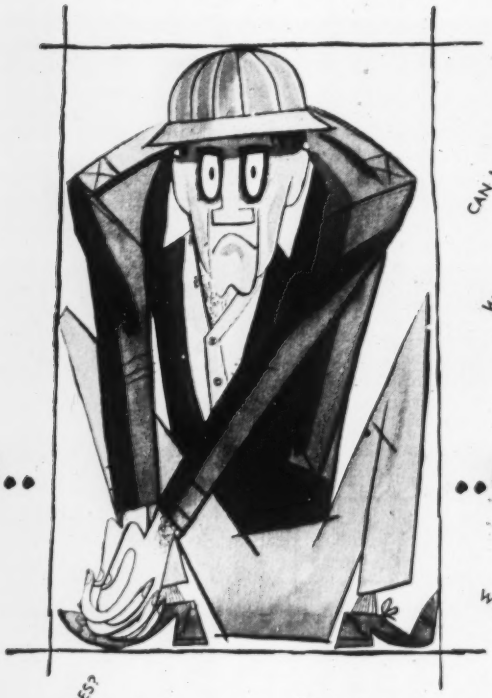


Amount of contracts let

	This Week	Cumulative 16 wks 1953	1952	% chge
Federal	$31.7	$493.0	$567.8	−13
State and Municipal	95.0	1,496.0	1,182.9	+26
Total pub.	126.7	1,989.0	1,750.7	+14
Total priv.	148.3	2,932.7	2,086.6	+41
U. S. Total	**$275.0**	**$4,921.7**	**$3,837.3**	**+28**
Contracts by type of work				
Waterworks	$4.2	$77.7	$78.2	−1
Sewerage	4.0	105.2	66.2	+59
Bridges	23.7	261.4	96.4	+171
Highways	23.1	415.6	357.5	+16
Earthwork, Waterways	7.3	115.5	168.7	−32
Buildings:				
Public, excl. hsg.	39.1	517.8	483.1	+7
Housg., pub.	3.7	221.5	312.6	−29
Housg., priv.	83.6	1,259.0	826.1	+52
Commercial	13.6	290.7	158.3	+84
Industrial	39.6	1,154.4	891.7	+29
Unclassified	33.1	502.9	398.5	+26
Total	**$275.0**	**$4,921.7**	**$3,837.3**	**+28**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR indexes		Base Year = 100 1913	1926	1949
Constr. cost.	Apr.	589.53	283.39	123.59
	Mar.	587.44	282.38	123.15
Bldg. cost.	Apr.	426.45	230.53	121.22
	Mar.	424.89	229.68	120.78
Volume	Mar.	547	222	158



CAN I FIRE WILDCAT STRIKERS?

WHAT'S THE LATEST ON PENSIONS FOR UNSKILLED LABOR?

WHAT DO BRICKS COST IN BOSTON?

ARE RUBBER-TIRED 'DOZERS MORE ECONOMICAL?

bosses.. ..got problems, too!

CAN I STOCKPILE LUMBER ON THE SIDEWALK?

WHAT DOES THE GOVERNMENT WANT FROM ME?

CAN I HANDLE PRE-STRESSING WITH MY FACILITIES?

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OFFICIAL PROPOSALS

Bids: April 28, 1953

Rt. 4 (1927)—Rt. U. S. 9 (1953) Drainage Improvement

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Route 4 (1927)—Rt. U.S.9 (1953), from Route U.S. 40 (1953) to Park Avenue and at Woodland Avenue, Drainage Improvement, City of Pleasantville, Atlantic County. Length 0.564 mile. The principal items are:

Estimated: 1,835 sq. yds. Gravel Base & Shoulders
1,172 sq. yds. Pavement Type MA-BC-1,2" thick
3,582 lin. ft. 12" & 18" Rein. Conc. Culvert Pipe
398 lin. ft. 12" & 18" Corr. Metal Culvert Pipe
36 Inlets and Manholes

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, at 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, April 28, 1953, at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: May 5, 1953

Construction of Two Water Supply Pressure Tunnels

INVITATION FOR BIDS

Sealed proposals will be received by the City of Tuscaloosa, Alabama, until 10 o'clock A.M., Tuesday, May 5, 1953, and then publicly opened and read for the construction of two water supply, rough bore, pressure tunnels, a total of 5,980 feet in length, not less than three (3) feet in width and six (6) feet in height, and larger if to the advantage of the bidder, as a part of the Yellow Creek Reservoir No. 2 Project, according to Specifications and Contract Documents on file in the Office of the City Engineer, City Hall Building.

The approximate quantities are as follows: 5,980 Lin. Ft. Tunnel; 400 Lin. Ft. Concrete or Gunite Lining; 4 Bulkheads; 1,520 Lin. Ft. 36" Pipe, installation only; 30 Cu. Yds. Concrete in Piers; 2,300 Lin. Ft. Rock in Trench 12" Deep; and 9,300 Cu. Yds. Rock.

Copies of legal advertisement and complete information will be furnished upon request. Plans, Specifications and Contract Documents may be obtained from the City Engineer upon deposit of $25.00

The City reserves the right to reject any and/or all bids.

CITY OF TUSCALOOSA, ALABAMA,
J. Hal McCall
Chairman of the Commission Board

OFFICIAL PROPOSALS

Bids: May 19, 1953

Conant-Mt. Elliott Relief Sewer Sections 2 and 3 Department of Public Works City of Detroit, Michigan

CONTRACTS PW-1433 AND PW-1434

Sealed proposals for a sewer, located in Jefferson, Leib, Monroe and Mt. Elliott Avenues, addressed to the CITY ENGINEER'S OFFICE, DEPARTMENT OF PUBLIC WORKS, of the City of Detroit, and endorsed: "Proposal for Contracts PW-1433 and PW-1434" will be received at the OFFICE OF THE CITY ENGINEER, 30TH FLOOR, GUARDIAN BUILDING, DETROIT 26, MICHIGAN, until 2:00 P.M. City of Detroit Time, on May 19, 1953, at which time they will be publicly opened and read aloud. Any proposal received after the above-mentioned time will be returned to the bidder unopened.

The work is separated into two Contracts, namely PW-1433 and PW-1434. Bidders may bid on each Contract separately or may submit a combined bid for both Contracts.

The work included in Contract PW-1433 consists of approximately 0.96 mile of 16'-3" inside diameter sewer, and approximately one mile of 11'-0" inside diameter sewer, to be constructed in tunnel under Jefferson Avenue, Leib Street, Monroe and Mt. Elliott Avenues. Some special structures and water main rerouting work are included.

The work included in Contract PW-1434 consists of approximately one mile of 16'-3" inside diameter sewer to be constructed in tunnel under Mt. Elliott Avenue between Mack and Ferry Avenues.

The Contract Documents, including Notice to Bidders, Form of Proposal and Agreement, Drawings, and Specifications may be examined at the office of the City Engineer, and copies may be obtained by making a deposit of $25.00 per set, which includes both Contracts, which sum will be refunded upon the return in good condition of the complete set of Contract Documents within ten days after receipt of proposals, or if used in submitting a bona fide proposal.

Each proposal shall be accompanied by a certified check or a satisfactory bidder's bond in an amount of not less than 5 percent of the total bid price, as security for the acceptance of the Contract.

All checks shall be made payable to the Treasurer, City of Detroit.

The City of Detroit reserves the right to waive any informality in any bid, or to accept any bid, or to reject any or all bids, should it be deemed for its best interests so to do.

CITY OF DETROIT
CARL D. WARNER
Commissioner of Public Works
G. R. THOMPSON,
City Engineer

Bids: April 28, 1953

Lincoln Tunnel Third Tube

THE PORT OF NEW YORK AUTHORITY
NEW YORK APPROACH BORINGS
CONTRACT LT-160.028

Sealed proposals for making land borings for the New York Approach of the Third Tube of the Lincoln Tunnel will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 3:15 P.M. on Tuesday, April 28, 1953, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1110, and copies will be furnished upon deposit of $25.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, April 16, 1953

OFFICIAL PROPOSALS

Bids: May 6, 1953

Construction of Northside Intercepting Sewer and River Crossing

NOTICE

April 8, 1953

Sealed proposals will be received by the Board of Contract and Supply of the City of Binghamton, New York for Contract 12A, Construction of the Northside Intercepting Sewer and River Crossing, until 10:30 a.m. EDST on Wednesday May 6, 1953, at its office in the Municipal Building; at which time and place the same will be publicly opened and read.

The Contract documents, drawings and specifications may be examined in the office of the City Engineer, City Hall, Binghamton, N. Y. Copies thereof may be obtained from the Department of Purchase, 3rd. Floor, City Hall, upon payment of $35.00 deposit. Checks shall be made payable to John E. Bloomer, Comptroller. Upon the return of said documents, in good condition, within thirty (30) days following the award of this contract, $25 of the deposit will be returned to each actual bidder; and $15.00 of the deposit will be returned to each nonbidder.

These proposals must be sealed and properly marked on the outside to indicate the contents, and each shall be accompanied by a certified check, bid bond, or New York Draft to the order of John E. Bloomer, Comptroller, or cash in the sum of five per cent (5%) of the total amount of the proposal, which amount will be held by the City without interest as a guarantee that the party or parties whose bid is accepted will enter into a contract and furnish a bond with surety satisfactory to the Mayor in the sum of fifty per cent (50%) of the amount of the contract.

The Board of Contract & Supply reserves the right to reject any or all bids.

Lawrence A. Mucci, Sec'y
Board of Contract & Supply

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION. NOTICE IS HEREBY GIVEN that sealed bids on Invitation No. 703S-301 for furnishing and delivering power transformer, voltage regulator and power circuit breakers for Lusk Rural Substation, Transmission Division, Wyoming, Missouri River Basin Project, will be mailed to P. O. Box 280, Casper, Wyoming or delivered to the office of the Bureau of Reclamation in time for the public opening at 2:00 p.m., Mountain Standard Time, May 7, 1953, at the office of the Bureau of Reclamation, Reclamation Center, Casper, Wyoming. Copies of the standard forms and of the invitations may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, Building No. 46, Denver Federal Center, Denver, Colorado; and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the invitations furnished for bidding purposes; for all others $0.25 per copy, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

for

DIRECT CONTACT
with the
MOST ACTIVE BUYERS
throughout the field of
ENGINEERING
CONSTRUCTION—

Use the
Searchlight Section
ENGINEERING NEWS-RECORD

OFFICIAL PROPOSALS

Bids: April 24, 1953

TOWN OF CORNWALL
ORANGE COUNTY, NEW YORK
RECREATION CENTER

Sealed bids or proposals will be received by the Town Board of the Town of Cornwall at the office of the Town Clerk until 8 P.M. (EST), April 24, 1953 for the construction of a 40' x 100' Swimming pool and bath-house at the Recreation Center.

Proposals will be publicly opened and read aloud at the said time and place.

All bids or proposals must be made upon the blank form furnished by the Town Clerk and in accordance with the Information for Bidders and the Specifications, copies of which may be secured at the office of the Town Clerk or at the office of Carpenter and Chumard, Consulting Engineers, 218 Wisner Avenue, Middletown, N. Y.

The Owner may request of the successful bidder a resume of the work, completed by him comparable to the construction shown on the plans and described in the specifications.

A deposit of $15.00 will be required for each set of Plans and Specifications distributed which amount will be refunded only to those submitting formal bids if said Plans and Specifications are returned in good condition within 30 days after the bids have been received and acted upon by the Town Board of the Town of Cornwall.

A certified check or bid bond for five percent (5%) of the total cost of the work, payable to the Supervisor of the Town of Cornwall, Orange County, N. Y. must accompany each bid.

The Town Board reserves the right to reject any or all bids or to waive any informalities in the bidding. No bid shall be withdrawn subsequent to the opening of bids without consent of the Town Board given within ten (10) days thereafter.

A corporation submitting a proposal must be one authorized to do business in the State of New York.

By Order of the Town Board of the
Town of Cornwall, Orange County, N. Y.
Edith B. Earl,
Town Clerk,
Cornwall, N. Y.

Dated: March 27, 1953

OFFICIAL PROPOSALS

Bids: April 28, 1953

Operations Building Door Drains

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CONTRACT NYA-210.012

Sealed proposals for the furnishing and installation of door drains in the Operations Building at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 3:00 P.M. on Tuesday, April 28, 1953 at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1110, and copies will be furnished upon deposit of $10.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the Contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, April 16, 1953

Bids: April 20, 1953

Construction & Installation of 2 Pumping Stations

Sealed Proposals will be received by The Mayor and Council of Easton, at their office in Easton, Maryland, no later than 8:00 o'clock P.M., Eastern Standard Time, Monday, April 20, 1953, for Construction and Installation of two (2) Pumping Stations, together with all necessary appurtenances, fixtures and fittings, for completing improvements to the Municipal Sewerage System in the Town of Easton, Maryland.

Form of Contract, Specifications and Plans and Blank Proposals may be obtained from the Town Clerk of Easton, Maryland, upon deposit of Ten (10) Dollars.

A Certified Check, Cash or Bid Bond in an amount of not less than five percentum (5%) of the amount of the base bid must accompany each bid.

The Mayor and Council of Easton, Maryland reserve the right to reject any or all bids, or sections of bids, as deemed to the best interests of the Town of Easton, Maryland.

W. H. CORKRAN, JR.
Town Engineer

M. EVELYN STARTT
Town Clerk

OFFICIAL PROPOSALS

Bids: April 28, 1953

New York International Airport Access Catwalks in Hanagars No. 3, 4 and 5

THE PORT OF NEW YORK AUTHORITY
CONTRACT NYA-190.006

Sealed proposals for furnishing and installing access catwalks in Hangars No. 3, 4 and 5 at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 3 P.M. on Tuesday, April 28, 1953, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1110, and copies will be furnished upon deposit of $10.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, April 16, 1953

EMPLOYMENT

Cessna
ENGINEERS
WANTED
recent graduates from engineering colleges needed in structures section for testing and stress analysis assignments
SEND RESUME TO
CESSNA AIRCRAFT CO.
ATT'N. PERSONNEL
WICHITA, KANSAS

ESTIMATORS
Young engineers capable of mechanical estimating for construction of refineries, steam power and similar industrial projects. Must have some field experience. Considerable weight given to ambition, intelligence and interest in estimating and cost analysis.
BECHTEL CORPORATION
220 Bush Street
San Francisco, California

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

BRIDGE DESIGNERS Wanted. Permanent location—38 hour week. Reply stating experience, education, age. Wyoming Highway Department, Cheyenne, Wyoming.

CONCRETE AND Formwork Superintendent to assume full charge concrete and formwork operations, including foundation work, on multi-story fireproof steel frame structure. About a 10 month operation. Located in central New York. Ready to start in about 45 days. Will pay exceptionally high salary and expenses, plus bonus on savings below estimated cost to a man of proven ability and experience. Reply in confidence in full detail. P-7373, Engineering News-Record.

DRAFTSMEN, DETAILERS and Checkers. Experienced in structural steel on all types of structures including bridges. Excellent opportunity, fast growing Engineering organization. Salary open depending upon experience. Good Working conditions, annual bonus. Send complete information, replies confidential. Samborn, Steketee & Associates, 1214 Cherry Street, Toledo 4, Ohio.

RESIDENT ENGINEER experienced in rock tunnelling and large water lines. Please give experience record, references and salary requirement in first letter. P-7432, Engineering News-Record.

SALES ENGINEER, metropolitan New York area. Specification sales to architects and engineers. Must have concrete or concrete construction experience and sales ability. Salary, expense and commission. Attractive for long term. Sika Chemical Corporation, Passaic, N. J.

(Continued on the opposite page)

STRUCTURAL STEEL
SALES ENGINEER
Exceptional opportunity for a thoroughly experienced structural engineer who can estimate & sell structural steel for all types of buildings, fabricated & erected.
Plant is long established, has large capacity, located in metro N. Y. area. State experience & salary for personal interview at our expense.
SW-7520, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED
An Alert Mechanical Engineer with Some Knowledge of Electrical Engineering . . . Must Be a Good Calculator . . .
PHILIPS & DAVIES, INC.
KENTON, OHIO

STRUCTURAL ENGINEER
With 10 to 15 Years Experience in Reinforced Concrete and Structural Steel Design for Electric Utility Work. *Write to*
Structural Engineer
PENNSYLVANIA POWER & LIGHT CO.
Allentown, Pa.

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EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

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$1.50 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
POSITION WANTED & INDIVIDUAL SELLING OPPORTUNITY WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.50 a line an insertion.

INFORMATION:
BOX NUMBERS count as 1 line additional in undisplayed ads.
DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:
The advertising rate is $17.10 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

NEW ADVERTISEMENTS: Address New York City Office, 330 W. 42nd St., N. Y. 36, for May 17th issue closing April 27th

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ENGINEER — PLANT EXTRACTIVE INDUSTRY

Mechanical or mining engineer experienced in structural steel design and installation relative to production of inert solids to specifications. Must be well informed on extractive processes with ability to direct use of crushers, conveyors, and screening in large volume operation. A desirable management position with good future for capable man, 40 or under. Unusual profit sharing and bonus plan. Please reply giving personal data and business experience.

P-7529, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

DRAFTSMAN

Want top rate detailer and checker on welded truss and rigid frame steel construction. Permanent position and top rate salary to experienced man.

KILROY STRUCTURAL STEEL CO.
8500 Union Ave. Cleveland 5, Ohio

SOILS ENGINEER

For Ohio Turnpike Project in Sandusky Area. Qualified, graduate, emphasis field soils and materials laboratory supervision experience, compaction and field density procedures. By eminent consulting engineers. Salary open. Submit resumé.

Box 265 Milan, Ohio

ASSISTANT CHIEF CHEMIST and CHEMIST

for large copper company Chile, South America. Must be experienced in analytical work of all kinds, including complete analysis of ferrous and non-ferrous metals etc. Three year contract. Transportation both ways and salary while traveling paid by Company. In reply give complete details.

P-7564, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

ENGINEERS or ASSISTANTS WANTED

Experienced in Making Field Inventories—Gas and Water Utility Properties. Immediate Employment with Prominent Pennsylvania Engineering Firm.

Write Box 366 HARRISBURG, PENNA.

WANTED LAND SURVEYOR

with New York or Connecticut license for land surveyor's office in southern Connecticut. Opportunity.

P-7545, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

Help Wanted
ENGINE REBUILDING SHOP MANAGER

Take charge gasoline and diesel rebuilding department, handle inside-outside service. Supervisional background necessary with operating knowledge of all precision engine reconditioning machinery. Must be top engine man able to recruit, train and direct 20 men, turn out quality work at a profit. Location Eastern Penna. Earnings and advancement will be attractive to a high type supervisor capable of taking full responsibility. Answers to include age, training, background of experience, when available and home phone number. P-7306, Engineering News-Record, 330 West 42nd St., N. Y. 36, N. Y.

POSITIONS VACANT
(Continued from opposite page)

ESTIMATOR OR Engineer—Must be experienced in heavy construction, for general contractors' office in metropolitan New York area. Furnish complete data regarding qualifications and experience. P-7553, Engineering News-Record.

WANTED: ARCHITECT for Industrial, Chemical and Power Plant work. Must be qualified for design, specifications, cost estimates, supervision and client contacts. This position is with a growing organization of Design Engineers located in Philadelphia and offers an opportunity for advancement and permanency. Write giving complete personal history, experience and earnings record, and references. P-7490, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

SALESMAN WANTED—Rent and sell heavy duty construction equipment — Cranes, air compressors, etc. RW-7417, Engineering News-Record.

SALESMEN, VISITING architects, engineers and contractors in Greater New York area wanted to sell Jointless Concrete Pavement; proven absolutely crackless in several yrs of heavy service. May be carried as a sideline. SW-7595, Engineering News-Record.

EMPLOYMENT SERVICE

WANTED-ENGINEERS, Designers, Draftsmen-Structural, Piping, M.E., C.E., E.E. and Industrial, also Teachers and Chemists. Cleveland Engineering Agency, 2132 E. 9, Cleveland.

SALARIED PERSONNEL, $3,000-$25,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

(Continued on page 166)

CONSTRUCTION PERSONNEL

JOB SUPERINTENDENT
ALSO
ELECTRICAL ENGINEER
Petroleum Refinery Construction
SAO PAULO, BRAZIL

Do Not Reply Unless You Qualify as Follows:

JOB SUPERINTENDENT

Accredited college degree in Civil, Mechanical or Chemical Engineering and minimum five years' responsible supervisory experience as superintendent directing all phases of operations in petroleum refinery construction.

or

Minimum two years' accredited college engineering and ten years' experience stated above.

ELECTRICAL ENGINEER

Accredited college degree in electrical engineering and minimum six years' responsible supervisory experience directing electrical operations in petroleum refinery construction.

Applicants must have initiative and qualifications pertinent to correlating designs with job site conditions.

These two challenging positions offer excellent salaries plus subsistence allowance. Selected applicants' immediate families transported and returned at our expense.

Applications must include complete detailed chronological history of education (naming schools and colleges attended, degrees received), names of employers (including periods employed, positions held, salaries received, nature and location of projects supervised). Name past employer references we are permitted to contact prior to interview.

Applications Are Confidential

Interviews arranged in New York City at our expense. Send complete information requested to PERSONNEL DEPARTMENT:

HYDROCARBON RESEARCH, INC.
115 Broadway New York 6, N. Y.

ESTIMATOR

Wanted by Phila. firm for large sewers, bridges, treatment plants. Must have had experience with contractors in similar work. State salary, experience and when available.

P-7430, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. *Forty-third year. Write today.*
WILSON *Engineering Corp.*
College House Offices - HARVARD SQUARE, CAMBRIDGE, MASS.

POSITIONS WANTED

(Continued from page 165)

REGISTERED ARCHITECT—Experienced on power, water, industrial & Municipal projects. Also general practice. University graduate—35. Married—registered several states. Wish permanent location smaller city. PW-7273, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT and Engineer desires work in New England. Experienced industrial plants, housing, heavy construction, bridge and marine work, skilled estimator. PW-7361, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT — 15 years experience on layout and supervision of industrial and commercial construction desires work in eastern U. S. Age 35. Best references. Available immediately. PW-7470, Engineering News-Record.

EARTHWORKS SUPERINTENDENT — Railroad embankments, dams, airports, highways, asphalt, soil cement, all types of excavation and earthworks construction. Planning, scheduling, organization of efficient operation. A driving superintendent to make men and machinery go. Completely familiar with Latin American construction. Fluent Spanish. Desire Latin American assignment. Excellent record and references. PW-7462, Engineering News-Record.

RESIDENT ENGINEER Asst. Res. Engineer Construction Supt. Airports, Buildings. All types heavy construction. 10 years foreign experience. Desire position local or foreign. Best of references. PW-7460, Engineering News-Record.

EXPERIENCED ARCHITECT'S Superintendent available June 1st desires position within 100 mile radius of Philadelphia, Pa. PW-7525, Engineering News-Record.

REGISTERED STRUCTURAL and professional engineer. Mature and responsible. With present firm as head of department 8 years but desire change. Good health, age 50. Excellent designer, original layouts, specifications, contracts, representative. Varied experience office and industrial buildings, marine construction, railroads, highways, airports, bridges. Will consider partnership. PW-7544, Engineering News-Record.

CIVIL ENGINEER, graduate, age 27, married, one child, 2½ years varied experience, now in Connecticut, will relocate in New England or middle Atlantic States for suitable position with heavy construction firm or consulting engineers. PW-7543, Engineering News-Record.

ASSISTANT SUPERINTENDENT or Assistant Project Manager on hydro-electric project. Age 27—C.E. graduate with 2 years experience on hydro-electric projects as field engineer and assistant superintendent. PW-7542, Engineering News-Record.

CIVIL ENGINEER desires change, age 42, graduate, registered, 20 years varied public works experience; administration, construction, estimating, design. Emphasis on sewers. Excellent references. PW-7541, Engineering News-Record.

SUPERINTENDENT OR Grade Foreman—20 years experience in Levee, drainage, highway work. Knowledge of Engineering, can handle men—plan work and supervise—available immediately—go anywhere. Write PW-7540, Engineering News-Record.

CIVIL ENGINEER graduate, 29, experienced 5 years Material and Soil, Heavy Construction. Desires permanent position. Minimum salary $5500. PW-7539, Engineering News-Record.

SOILS ENGINEER, single, BSCE from MIT, 1 yr. graduate soils at Northwestern, 2 yrs. exceptional office, laboratory, and field experience with nationally known foundation consultants. Work must be essential. PW-7538, Engineering News-Record.

• ENGINEERING SALES •

District Manager of Sales for nationally advertised technical products desires sales position in Pittsburgh. Also acquainted in New York area. M.E. Degree plus 20 years experience in engineering, sales and management. Requests personal interview to present qualification.

PW-7489, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

AVAILABLE
CONSTRUCTION SUPERINTENDENT

With engineering degree, 25 years broad experience in structural, mechanical and electrical work at administrative and executive level. Available now for any domestic or foreign employment.

PW-7532, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

SUPERINTENDENTS AND PROJECT MANAGERS TRAINING COURSE

All instructions by mail. Send today for sample lesson and complete details

Geo. E. Deatherage & Son, Dept. 101
411 S. 5th Ave. Lake Worth, Florida

POSITIONS WANTED

ENGINEER, CIVIL, B.C.E., 4 yrs. office and field, seeks position with constr. co., N.Y.C. vicinity. PW-7536, Engineering News-Record.

CIVIL ENGINEER, 28, N. Y. State Lic., 9 yrs. Design; Construction experience, seeks responsible administrative or sales position, long range opportunity. N.Y.C. vicinity. PW-7552, Engineering News-Record.

SOILS ENGINE, age 35, Registered P.E., Masters Degree, 10 years experience including supervision of field and laboratory work. Analysis of data for foundation design, compaction control, embankment stability, etc., married. PW-7551, Engineering News-Record.

WORK WANTED

Equipment Design, Plant Layout, Materials Handling Methods & Cost Analyses. WW-7424, Engineering News-Record.

BUSINESS OPPORTUNITIES

Wanted Partner with ample financial resources for general contracting business in Florida. Active or Inactive. Have everything necessary but ample capital. Stand rigid investigation. Inquiries invited. BO-7533, Engineering News-Record.

Well established Distributor of Construction Equipment wants middle aged man with capital to purchase stock interest and also manage sales on salary and profit basis. All replies or conferences to be strictly confidential. We hold exclusive franchises with leading manufacturers. BO-7504, Engineering News-Record.

SURVEYING INSTRUMENTS

GURLEY **REPAIR SERVICE**

• Send your Gurley instrument to the factory for repair, rebuilding, adjustment, or service. Genuine Gurley parts, properly fitted, available from stock. Factory workmanship and equipment. Estimates submitted. Shipping box furnished free on request.

W. & L. E. GURLEY, Since 1845
540 Fulton Street, Troy, N. Y.
➤ Write for leaflet "Gurley Repair Service"

TRANSITS and LEVELS

NEW OR REBUILT

SALE OR RENT

HEADQUARTERS FOR REPAIRS — any make

We will buy or trade in old Transits, Levels, Alidades, etc. Send instruments for valuation.

Write for Catalog NR-34 of new engineering Instruments, Engineering Field Equipment and Drafting Room supplies and NRL-34 for list of *rebuilt* instruments.

WARREN-KNIGHT CO.
Mfrs. of Transits & Levels
136 N. 12th St. - Philadelphia, 7 Pa.

FOR SALE

One Lorain Truck Crane, new condition, model MC 414, Serial number 14331, 20 ton capacity, equipped with screw jacks in outriggers and precision boom hoist for erection work. Recently installed new oversize Waukesha engine in crane end, model SRKR. Truck engine completely overhauled. 85 feet of boom and short jib. Ready for work—price $20,000.

One new never used Lorain Truck Crane Boom, model MC 414—base and top sections—price $800.

Three Rome Model 404 Hercules Diesel powered hydraulic controlled graders—2—1948 serial #18466d and 18528—and 1—1949 serial #19224. Two are in good condition and now working. All three for $7500.

JOHN H. CARTER
49C Parkway Apartments, Haddonfield, N. J.
***Haddonfield* 9-6757**

FOR SALE
CLEVELAND NO. 3 DOUBLE ANGLE SHEAR
Capacity 6 x 6 x ¾ angles. Good condition.
ST. JOSEPH STRUCTURAL STEEL CO.
Box 68 Station A St. Joseph, Mo.

FOR SALE
DEWATERING EQUIPMENT
1¼" Wellpoints, stems & hose Connections—For complete listing write:
P. O. Box 628
Hammond, Indiana

2—Steam Whirleys 18' Bull Gear, Boiler 66" x 10' 6" can be mounted on barge, now on 16' track gauge can be seen in operation.
Bucyrus-Erie Steam Crawler Type Pile Driver, new boiler 150# Pressure, 70' Box Boom, 27" with pads. Fine condition, serial near #11,000.
Browning Steam Loco Crane 25 ton cap. Just overhauled.
FS-7115, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

FOR SALE
1½ Yd. Model 605 KOEHRING DIESEL—Like New
STEWART S. SILL
Sodus Point, N. Y.

FOR SALE
MODEL 255A BACKHOE
Completely rebuilt, now working $12,500 F.O.B. Lutherville, Maryland
Lutherville Supply & Equipment Co.
Front & Lincoln Ave. Lutherville, Md.

1 Yd. SHOVEL ATTACHMENT
Complete
For Model 600 P & H
LOUIS ARGENIO, INC.
381 Broadway Newburgh, N. Y.
Phone Newburgh 5102

WANTED TO BUY
FOR CASH!
Contractor's Equipment, Low Bed Trailers, Shovels, Dozers, Cranes, etc.
Also: Dump Trucks, Trailers, and Euclids
Will buy one piece or entire lot.
WARREN E. McCARTHY
241 Mystic Ave. Medford, Mass.
Mystic 6-3500

FOR SALE

EXCELLENT PHYSICAL & OPERATING CONDITION

23 Austin-Western Automatic Air-Operated Dump Cars 20 Cubic Yards Capacity, AB Air Brakes, Lift Door Std. Gauge.

13 Austin-Western Automatic Air-Operated Dump Cars 20 Cubic Yards Capacity, AB Air Brakes, Lift Door with unloading aprons, Std. Gauge.

2 Jordan Standard Spreader Cars, 50 ton Capacity, AB Air Brakes, Enclosed Operator's Cab, Std. Gauge.

MARSHALL RAILWAY EQUIPMENT CORP.

50 Church St. N. Y. 7, N. Y.
Cortlandt 7-8090

FOR SALE

DUAL DRUM PAVER

1 Koehring Model 16E twinbatch dual drum paver, with General Motors Diesel Engine, with pneumatic tires, with hydraulic steering, with hydraulically controlled bucket with elevating boom, Serial No. of Paver: 2A13747.
Machine used on one job only, in excellent condition. Available for immediate delivery. For inspection and other details, write or telephone:

Allied Construction Equipment Company
4015 Forest Park Ave., St. Louis, Mo.
Telephone Number: Franklin 1818 or 7132.

LIQUIDATION SALE

Equipment priced to sell in excellent condition

3—Caterpillar DW20 Tractors & W20 Bottom Dump Wagons
1—Euclid 38FDT Tractor & 89W Bottom Dump Wagon
3—International TD24 Tractors W/F Bucyrus Erie Bullgraders & PAPCU's
2—International TD24 W/F Bucyrus Erie Push Blocks & (1) W/F PAPCU's
3—International TD-18A Tractors W/F Hell Angle Dozers & PAPCU's
1—Worthington 500 Diesel Compressor on Rubber
1—Bucyrus Erie TDO112 Tamping Roller
1—Bucyrus Erie CR-4 Ripper
1—Rogers Low Deck 60 Ton 16 Wheel Trailer & KI012 Internation Tractor
1—220 Gal. Tank Trailer W/F Gas Engine & Pumps for watering Roads, etc.
Misc. Light Plants, Airtools, Chain Saws & Water Pumps.

Equipment available immediately located western Penna. All Machinery Purchased New
FS-7011, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

LOCOMOTIVE CRANE: Link Belt 25 ton capacity, standard R.R. gauge, gasoline powered, cast steel trucks, air brakes, with or without 1¼ yd. Williams clam shell bucket, thoroughly modern, excellent condition. Located Minnesota. For sale or rent.

CAR DUMPER: Link Belt, will dump standard R.R. gondola cars up to 90 tons capacity, transfer table 54'. Specifications and photos available.

COMPRESSOR: Worthington DC2, 29/18-½ x 21, motor 600 H.P. synchronous, 440 volt, with all auxiliary equipment.

BUCKET: Blaw Knox type W730, 2½ yd. clam shell, new condition.

DIESEL MOTOR: Caterpillar D13000 portable on skids, 122 H.P.

HOIST SPECIALS: 1—Single drum, all steel, 10' dia., 6' face, 1¾" rope, 600 FPM, 900 H.P., 82,000 lbs. working load. 1—Double drum 10' dia., 1200 ft., 1⅞" rope, 1400 FPM, 1200 H.P. 1—Vulcan, double drum, 200 H.P., 8' dia., 4' face, one drum clutched. 1—Single drum 250 H.P., 5'6" dia., 46" face, 1-¼" rope. All the above with all auxiliary equipment. Other Hoists 100 H.P. to 1050 H.P., single and double drum, with electrical equipment.

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A. J. O'NEILL
Lansdowne, Pa.
Phila. Phones: MAdison 3-8300—3-8301

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CONTRACTOR SELLING OUT
ALL EQUIPMENT

Koehring Shovel 1½ Yd. Cat Diesel New 1951 $35,000.00
Marion Shovel ¾ Yard Crane & Backhoe G. M. Diesel extra large tracks new 1948.....$17,000.00
Lorain Shovel ¾ Yd. and Backhoe Cat Diesel new 1950.....$17,000.00
Unit ½ Yard Crane new 1951.....$7,000.00
2—Unit ½ Yard Backhoes, Diesel.....$8,500.00
H. D. 20 with Pusher block 17 Yard La Plante Choate wagon, Used 400 hrs.....$28,000.00
H. D. 19, new motor, new tracks, angleblade $10,000.00
3 Garwood Carryalls 11 Yards.....$3,500.00
H. D. 9 Angleblade, Used 4 months.....$9,000.00
5 H. D. 14 Bulldozers with blades $3,500.00 to $6,500.00
Cat D. 6 Angleblade new 1951.....$7,500.00
Grader Cat #12. Like new.....$7,500.00
3 Terra Corbras, new motors, 80 pct. rubber $6,500.00
Griffin Well Point System
Also Trucks—Concrete Mixer—Fordson Tractor
Contractor Disposing Surplus Equipment

FELIX CLAUSS & SONS
4400 "D" Street Philadelphia 20, Penna.
Phone: Michigan 4-7963

BOOMS—DERRICKS

Crane booms for all makes of cranes—stiff leg derricks—custom welding fabrication. Prices competitive, fast service.

THE DEL-STRAT CORPORATION
Delaware, Ohio
P. O. Box 195 Phone 23150

ASPHALT & OIL TANKS

IN MO.—TEX.—N. Y.—FLA.
33—8000 & 10,000 GAL. R. R. TANK CAR TANKS.
6—HORIZ. 15,000 & 20,000 GAL.
9—VERT. 15,000, 42,000, 120,000 GAL.
LESTAN CORP., ROSEMONT, PA.

"Opportunity" Advertising:
Think
"SEARCHLIGHT"
First

EQUIPMENT BARGAINS

Largest Inventory in Rocky Mountain Empire. One of the West's most modern and complete equipment repair shops.

All Items are Below Present Ceiling Prices

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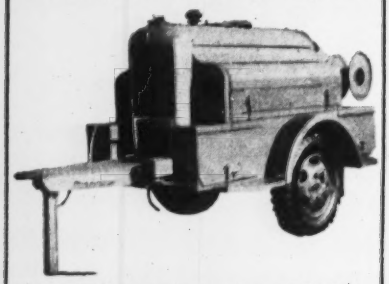

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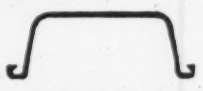

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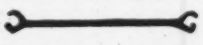

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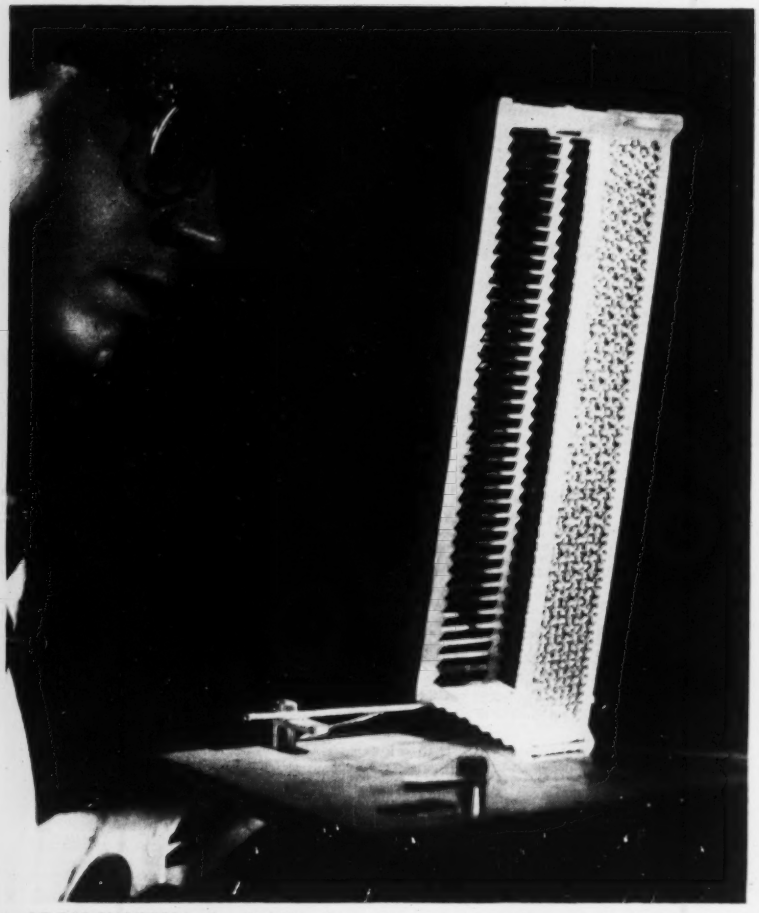

A CROSS-SECTION of a Toplite glass unit shows the prisms on the inside of the face of the unit that limit and control the amount of daylight and solar heat transmitted through the unit.

Toplite system filters solar heat for cool interiors

Conventional skylighting methods, although valuable for illuminating rooms with deep interiors, present a number of problems regarding lighting, heating and structure. For lighting, the skylight has the disadvantage of widely disparate peaks of illumination intensity—extremely high in summer and extremely low in winter, plus wide diurnal variations. Uniform heating of a skylighted room has been similarly difficult because of annual and diurnal extremes of heat gain and heat loss. Structurally, the skylight is commonly the weakest area of the roof—seldom completely waterproof and generally easily broken.

A system that is said to eliminate these common criticisms of skylighting has been developed by the Kimble Glass Company. Called the "Kimble Toplite System", the construction consists of factory fabricated panels of glass and aluminum.

The glass portions of the panels are hollow glass blocks, with smooth external surfaces, but with internal surfaces modified for specific purposes. The inside of the upper surface is so constructed that sawtooth prisms will reflect a large part of the high angle, hot, bright summer sunlight that normally makes skylighted rooms uncomfortably warm and over bright.

This series of prisms is so designed, however, that the high light from the northern half of the sky is readily transmitted. A high transmission of such light is desirable because its intensity on the horizontal surface is relatively low and does not result in problems of glare or solar heat. Similarly, low angle light from the south, such as that emitted by a winter sun, is transmitted for the same reasons.

The inside of the lower face of the block has a surface designed to distribute the light evenly to the area below. A Fiberglas sheet, 0.002 in. thick, between the two faces of the block further softens the light transmitted through the unit and augments the insulating effect of the vacuum between the two pieces of glass.

The glass units, measuring 10⅜ in. square by 3 in. thick, are set in insulated aluminum grids and made weatherproof by pouring a hot tar and sulfur compound over the structural ribs. No porous materials are exposed to the relatively severe weathering processes undergone by most flat roof surfaces. The panels have been job tested over a period of years and are said to be completely weatherproof.

Completed panels weigh 16 psf and are made in four stock sizes—3x3 ft, 4x4 ft, 4x5 ft and 3x6 ft. Because of their light-directing feature, panels must be oriented north-south for best performance. Studies by the manufacturer indicate, however, that the panels can be rotated as much as 30 deg. from the north-south axis without an appreciable loss in performance.

It is recommended that the panels be installed on curbs and flashed to the roof surface. This procedure should eliminate the possibility of accidental walking on the panels, but should this occur nevertheless, the live load capacity of these panels, 40 psf, is such that they will resist breakage.

When installed, the panels should be pitched a minimum of ¼ in. per ft. for adequate drainage. Since the exterior of the panel is smooth, this drainage should be sufficient to keep the glass clean under normal rainfall conditions.

Toplite permits the daylighting of flat deck industrial buildings without resorting to monitors or saw-tooth construction. Lighting studies conducted by the manufacturer indicate that a panel of moderate size in each bay of an industrial building will provide a level of illumination satisfactory for ordinary industrial tasks. KIMBLE GLASS COMPANY, TOLEDO 1, OHIO.

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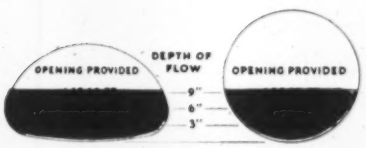
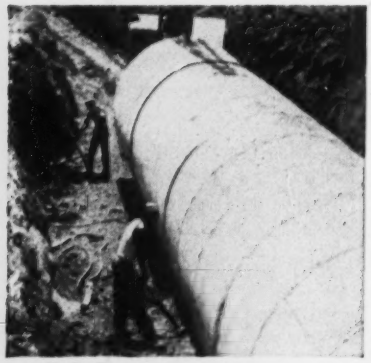
The broad base provides much more cross-sectional area to handle greater volumes of water than a full round pipe of equivalent size and cost.



REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N. Y.

Toncan Iron Drainage Products include: **Corrugated Metal Pipe • Perforated Corrugated Metal Pipe • Sectional Plate Pipe • Sectional Plate Arches • Corrugated Metal Arch-Pipe • Sectional Plate Arch-Pipe • Corwel Subdrainage Pipe • Bituminous Coated and Paved Pipe**

Manufacturers of Toncan Iron Drainage Products

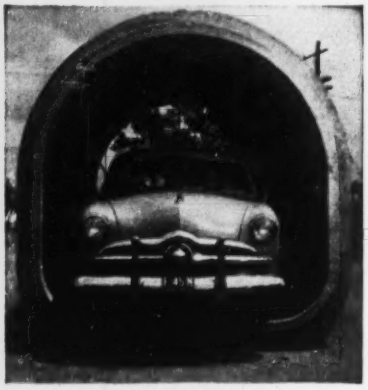


If it's concrete . . .

UNIVERSAL

world's largest manufacturer of concrete sewer and culvert pipe

can make it



26 plants for convenient, economical service.

30 years' experience in pipe, cribbing, precast manholes, river-weights, flat base pipe. Name it, we make it!

UNIVERSAL
CONCRETE PIPE CO.
297 South High Street
Columbus, Ohio
Publishers of Famous "Pipe Dreams"

Jaeger enters loader field with torque-converter unit

With no background in the manufacture of front-end loading equipment—and a highly competitive market to buck—Jaeger Machine Co. has designed and built its first loader.

Basically, Jaeger's Model LP-100 is a rubber-mounted, hydraulicly-operated, one-yard capacity front-end loader, driven through a torque converter.

• **Power optional**—Power plant is either a 55-hp gas or a 57-hp diesel. The gasoline engine is a six-cylinder Continental F6-226 of 226-cu in. displacement. Bore and stroke of this model is $3\frac{7}{16}$ in. and $4\frac{1}{8}$ in., respectively. The four-cylinder Continental DH-260 diesel has a displacement of 260 cu in. and a bore and stroke of $3\frac{7}{8}$ in. and $5\frac{1}{2}$ in., respectively. Both engines turn at 2,000 rpm.

• **Transmission**—Power and transmission are set up this way:

The engine is set at the rear of the frame for maximum balance. Developed torque is transmitted and multiplied by a Fuller single-stage, two-phase torque-converter located between the engine and the master clutch. The clutch is of an 11-in. spring-loaded automotive type and is used for shifting only. In combination with a Jaeger five-speed transmission, the torque-converter provides an infinite number of gear ratios between the five gear speeds. It also permits instantaneous shifting without damaging shock load on the power train.

The engine-transmission system pushes the loader at five speeds forward, from 2.5 mph to 18.7 mph, and five speeds reverse, from 3.75 mph to 28.2 mph.

• **Tandem hydraulic pump**—At the rear of the engine, directly connected to the flywheel through a flexible coupling, is a tandem hydraulic pump. One impeller, with a capacity of 32 gpm, furnishes hydraulic power for boom and bucket controls; the other, a 5-gpm unit, takes care of the requirements for power steering.

• **During the bite**—In operation, the horizontal hydraulic rams thrust forward in direct line with the initial movement of the main boom arms and the travel of the machine, not at an angle as in some loaders. The boom arms during the upward sweep crowd the bucket 13 in. into the material for a fast, full bite. The bucket control rams tilt the bucket to level as it rises to assure a full load when the bucket reaches the carry position. This is accomplished through the parallelogram design of the boom arms and linkage that automatically keeps the bucket level from the carry to full-height dumping position.

• **When it dumps**—When the load is ready to be dumped it takes only nine seconds to lift the bucket to its full dumping height of 8 ft. 2 in. at the 76-in. wide flared dumping lip. Clearance is 10 ft. 4 in. at the bucket hinge. For quick dumping, the bucket tilts to 50 deg. and may be shagged or slammed to free sticky materials.

• **Added features**—Pipe cross-struts between the boom arms serve a dual purpose as stiffeners and hydraulic oil reservoirs and equalizers. The reservoirs are fed by single hydraulic supply lines, but two lines of equal length

(*Continued on page 179*)

THE ENGINEER'S REPORT

DATA

LUBRICANT RPM Tractor Roller Lubricant

UNIT Track bearings – Caterpillar D-8

CONDITIONS Highway Grade Construction – rock, dust

PERIOD 9500 hours

FIRM M. L. & C. R. O'Neil, Creswell, Oregon

Track-roller bearings still good after 9500 hours work!

ON ROCK- AND DIRT-MOVING JOBS of contractors M. L. & C. R. O'Neil, Creswell, Ore., this D-8 Caterpillar, lubricated with RPM Tractor Roller Lubricant, worked 9500 hours without replacement of a single track bearing. The bearings are still in good condition.

Mr. C. R. O'Neil says, "We've used RPM Tractor Roller Lubricant over 9 years and always get extra long service from track bearings. In 3½ months on our present job, with 5 D-8's working, we've had one roller off, and that was to replace a lock washer."

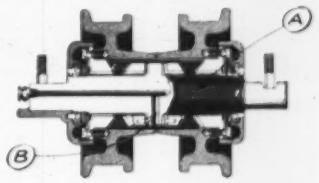
MAKING A CUT THROUGH HEAVY ROCK FORMATION. Building this new section of U. S. Highway 30 in eastern Oregon is typical of the tough work O'Neil equipment does in many parts of the country. On different jobs, it has worked in a variety of climates—summer temperatures over 100° in the shade with heavy winds and dust, to below freezing with snow and mud. Track bearings on all equipment are lubricated with RPM Tractor Roller Lubricant every 8 hours.

REMARKS: There are three grades of RPM Tractor Roller Lubricant—Light, Medium, and Heavy—to meet all climatic and operating conditions in Caterpillar and International track-roller bearings. For Allis-Chalmers, RPM Tractor Roller Lubricant—A. C. Type is recommended.

RPM

TRADEMARK "RPM" REG. U.S. PAT. OFF.

How RPM Tractor Roller Lubricant resists wear in the toughest service



It flows evenly to all bearing surfaces, lubricates and retards rust formation.

A. Contains chemical anti-wear agent—maintains tough lubricating film.

B. Has stringiness compound—improved viscosity, resists leakage, helps keep protective grease seal outside bearings.

FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your nearest distributor handling them, write or call any of the companies listed below.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • STANDARD OIL COMPANY OF TEXAS, El Paso
THE CALIFORNIA OIL COMPANY, Barber, New Jersey • THE CALIFORNIA COMPANY, Denver 1, Colorado

NOW all the HOT PATCH material you want..any type..any quantity where and when you want it

for ALL maintenance and small paving jobs

the NEED

In the face of ever heavier traffic loads, rising costs and lack of funds greatly limit new construction and place an ever greater burden on maintenance programs in city, town, county and state. For this work even the best patch is none too good. Yet until the advent of the new Mixall, an efficient and economical means of producing all types of hot high quality patch material has not been available.

is ANSWERED

A small, highly portable unit, capable of on-the-spot production of even the highest types of hot mixes comparable to those produced in Barber-Greene's largest continuous hot mix plant—*that* is the Mixall. Its range of usefulness extends throughout the field of road maintenance into small paving and resurfacing jobs.

In the Mixall, Barber-Greene offers a unique and effective combination of an efficient rotary drum aggregate dryer with a proved B-G twin shaft heated pugmill mixer. It is rightly called the Mixall because of *all* the things it can do . . .

- . . . **Mix all quantities:** from a single 300 lb. batch up to 5 tons per hour of hot mix—or up to 10 tons per hour of cold patch.
- . . . **Mix in all locations:** towed to the job by truck loaded with aggregate . . . fed directly from truck or from stock pile or pit. Can work in a single traffic lane. No set-up time required.
- . . . **Mix in all weather:** heated aggregate makes low atmospheric temperature mixing possible — allows quick repair to prevent major failures.
- . . . **Mix all types:** of bituminous materials including stabilized mixes—as well as low slump Portland cement mixes.

Barber-Greene BG

Aurora, Illinois, U. S. A.

feed the hydraulic rams controlling bucket tilt. The purpose served here is to avoid unequal thrust or retraction of the rams and resultant torsional stresses on the bucket.

A salient feature of the loader's design is the attention given to balance and equilibrium. The machine has been so designed that the fulcrum of the load is at the driven wheels, thus the tractive capacity of the 13:00 x 24 rock-lug tires increases in direct ratio to the weight of the load. There are no underslung counterweights at the rear of the machine to impair the full 12-in ground clearance. Instead the counter weighting is concealed in grille castings, heavy rear-wheel hub castings and the extreme rearward mounting of the engine.

Tractive power of the machine is aided by heavy front castings and further increased by loading 500 lb of calcium chloride solution into each front tire. Weight of the entire machine with the front tires filled with 1,000 lb of the solution totals 11,125 lbs.

A hydraulic release mechanism permits the disengaging of hydraulic control of the bucket. This lets the bucket "float" when gathering loose material on uneven ground or to clean gutters or pavements without cutting into the surface.

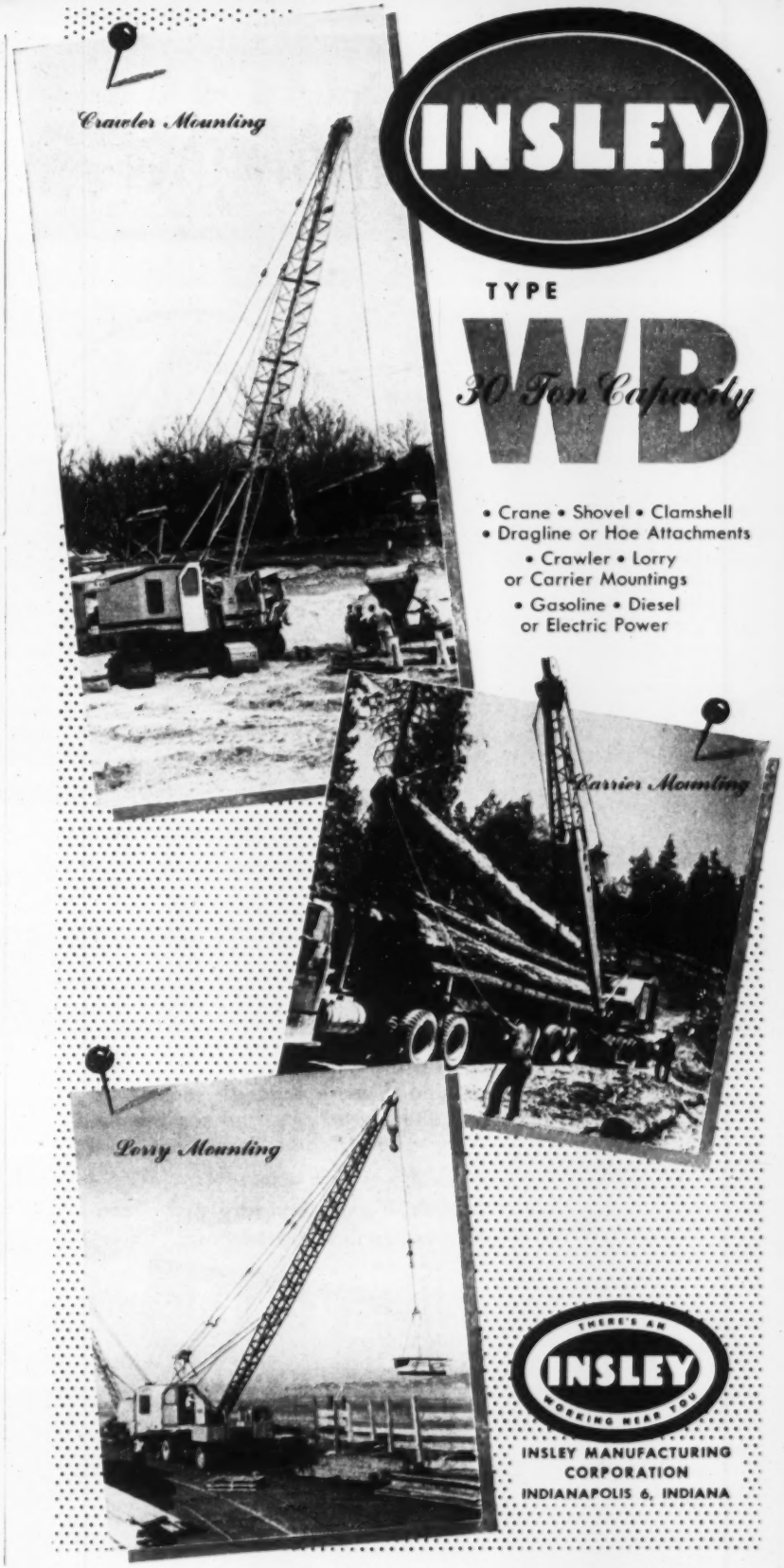
The loader has a relatively short wheelbase of 78 in. that permits a turning radius with power steering of 14 ft at the outside rear tire.

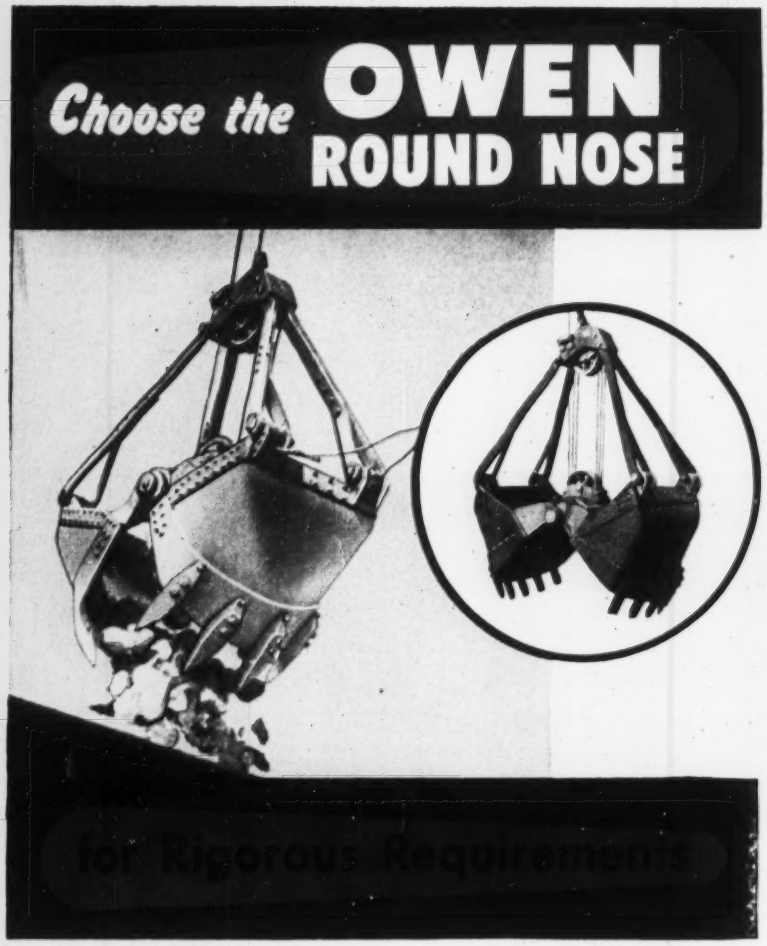
Although the loader has yet to receive the long term acid-test of consumer reaction, the Jaeger Company intends to widen the breach it has made in the loader field by producing in the near future a short-coupled ¾-yd loader, without torque-converter, and a larger 1½-yd machine. JAEGER MACHINE CO., COLUMBUS, OHIO.

"Fire in the Hole" insurance with new plug

According to the National Mine Service Co. the new Quick-Seal tamping plugs will end falling or pulling out of charges from blast holes and avoid having them wind up unexploded in the muck pile.

The plugs are made in two parts: (1) a hollow, thick-walled cylinder of accordion-crimped paper held in shape by a glued paper band; and (2) a conical wooden wedge. As the plug is rammed home over the charge, the wooden plug expands the paper cylinder to form an airtight seal. The plug comes in a variety of sizes and is equally effective with either lateral or overhead blasting. NATIONAL MINE SERVICE CO., Beckley, W. Va.





If you've had occasion to use a round-nose hand shovel you'll understand why—

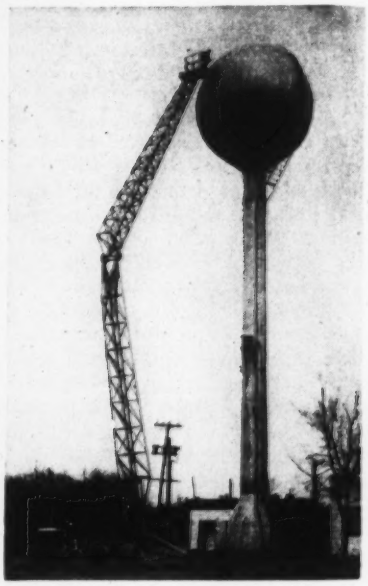
An Owen Round-Nose Bucket is uncommonly efficient in handling rock and broken slag and in exceptionally hard excavating and dredging operations.

As compared to a straight-nose shovel, the round-nose penetrates hard earth more readily—"noses" its way into broken rock with less effort—and consistently comes up with a "bigger load." And like an egg it is stronger due to its curved surface.

In the Owen line is a bucket for every specialized and general digging and rehandling purpose.

BUCKETS AND GRAPPLES
Write for Catalog

THE OWEN BUCKET CO.



Tower gives workmen 100-foot reach

When the operator of this rig lowers the boom he will have traveled a little over 100 ft. The bottom boom of this aerial tower is 44 ft long, the top boom measures 48 ft. The truck chassis, turntable and operator's platform make up the additional length. Maximum reach of 58 ft can be obtained when top boom is in a horizontal position.

The initial model of the 6½-ton tower was supplied to a limestone mining company to inspect 90-ft mine ceilings, but the tower also could prove useful in construction work where conventional methods for reaching high spots are either hazardous or impracticable. However, the useful load on the platform in any position is limited to 500 lb.

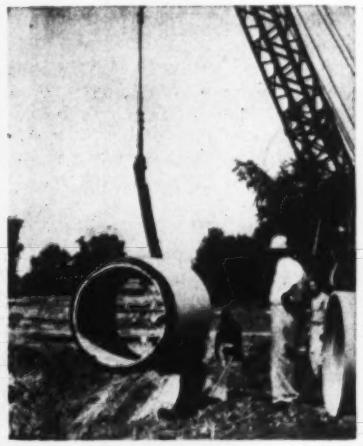
Positioning of the platform is controlled by the operator on the platform through a one-lever hydraulic control. According to the company, the operator can elevate or drop the upper or lower boom and swing the turntable 280 deg all at the same time with one hand.

The outriggers for the tower are also hydraulically operated and have a spread of 19 ft from pad to pad when fully extended.

The rig shown here is mounted on a 24-ft Hug truck chassis with power required to supply the hydraulic pump provided by a Buda diesel. But, the tower may be mounted on any standard large truck chassis, and a gasoline power plant for the pump could be used.

When fully collapsed for road travel

the unit stands 13 ft 6 in. overall. MOBILE AERIAL TOWERS, INC., FORT WAYNE, IND.



Tight, flexible seal with new sewer joint compound

Production of a new Sewertite, a cold plastic sewer joint compound, has been announced by the Philip Carey Mfg. Co. Favorable thermoplastic properties of the sealing compound give joints tight but flexible sealing and are said to provide greater resistance to cracking than ordinary rigid cement or hot sealing compounds. As applied, Sewertite has a heavy trowel consistency and is extremely adhesive, insuring quick permanent joints.

Sewertite is acid and alkali resistant, waterproof, flexible and permanent. Other advantages claimed for the compound include immediate back-fill after application, flexible joints which remain pliable, reduction of root break-through and long life without joint repair. The Philip Carey Mfg. Co., Dept. SP, Cincinnati 15, Ohio.

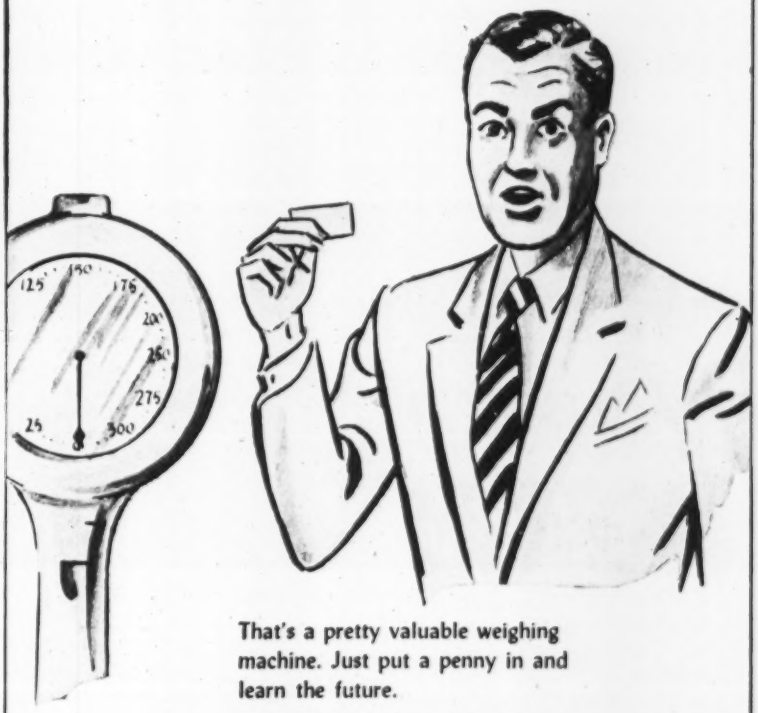
Plastic sanitary fixtures for pre-fab barracks

Rugged, light-weight wash-basins, shower stalls, utility tubs and urinals of plastics have been developed by Bassons Industries Corporation for the Corps of Engineers.

These units are intended to replace those made of cast iron and porcelain enamel used in prefabricated barracks that may be dismantled repeatedly for shipment. The new units are all made of polyester-impregnated glass cloth which is durable and rustproof.

The company also has molds for producing similar but lighter products for general industrial and institutional use. BASSONS INDUSTRIES CORP., 1432 West Farms Road, New York 60, N. Y.

"At 10:35 A. M. tomorrow you will discover that your cashier has embezzled $40,000"



That's a pretty valuable weighing machine. Just put a penny in and learn the future.

If it were only that simple!!!

But it's not. You never know when or how human weakness may cause paralyzing loss — even financial disaster — for you. That's where the **INVISIBLE ARMOR** of a NATIONAL SURETY BLANKET BOND takes the guess-work out of the future. With it you are protected against dishonest acts by employees.

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FASTEN IT BETTER... AT LESS COST... WITH NELWELD

FOR EXAMPLE...
CORRUGATED ASBESTOS ROOFING AND SIDING

ONE SIDE APPLICATION
FINE APPEARANCE GREATER STRENGTH
LOWER INSTALLATION COST

Nelson construction fasteners are distributed by United States Steel Supply Co., Reynolds Metals Co., Aluminum Company of America, Johns-Manville, Philip Carey Mfg. Co., Armstrong Cork Co., Southern States Iron Roofing Co.

NELWELD
NELSON STUD WELDING
DIVISION OF GREGORY INDUSTRIES, INC., LORAIN OHIO

Ford Industrial line adds new four-cylinder engines

Featuring a relatively large bore of 3.4375 in. and a short 3.6-in. stroke, a new four-cylinder overhead-valve model has been added to the Ford line of industrial engines. It is claimed that the large bore and short stroke tend to reduce wear and improve fuel economy.

The engine, designated as the Ford "134", develops 45 bhp at 2400 rpm, an increase of approximately 7 hp over last year's model. At least a part of this increase is ascribed by the company to the use of low-friction overhead valves.

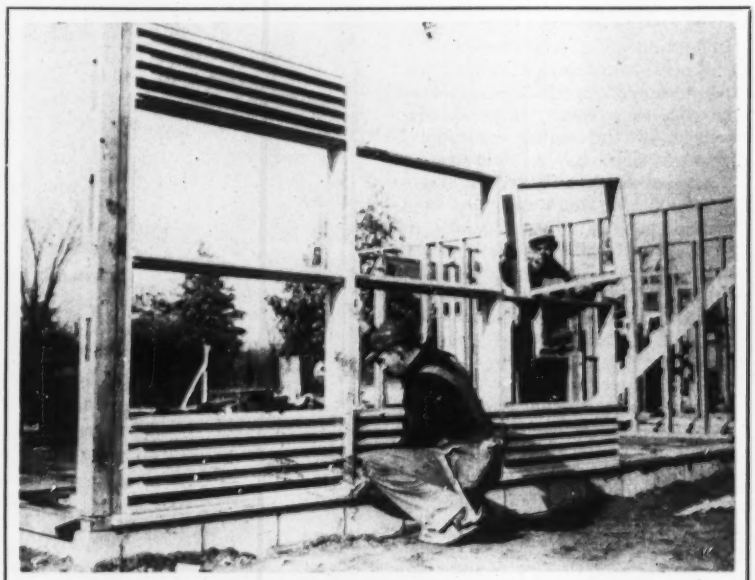
Full-length water jackets surrounding each cylinder are said to simplify cooling and provide better temperature control. FORD MOTOR COMPANY, DEARBORN, MICHIGAN.

Pressure loss reduced with new inserting valve

A new line of 4, 6 and 8-in. inserting valves and equipment for their installation have been developed for placement in existing lines where additional valving is required and a shut-down of the line is impracticable or hazardous.

After they have been installed, these H-800 inserting valves may be closed if it is desired to work on the section of line they control. According to the company, the valves may be inserted with no loss of water.

The sizes of the valves correspond to the size of the main and all valves have full-size seat openings. The valve sleeve has been reduced in size in order to reduce space requirements for installation. MUELLER CO., DECATUR, ILL.



Window units assembled in any size

While the carpenter at the right adds another fixed window unit the one at left attaches a piece of upright trim across two others and top and bottom wood-louvered units. These two types, along with a ventilating window unit and an insulated wall unit complete the line of modular units available from Solar Air-Flo Inc. The window system is designed for glazing with Thermopane, made by Libbey-Owens-Ford Glass Co.

Units measure 4 ft by 2 ft 4 in. and are 4¾ in. thick. They interlock to stack in any desired combination, horizontally or vertically and each has a load-bearing factor of 2,400 lb. Vent units have exterior louvers and adjustable, drop-down interior doors. They are also provided in quarter- and half-sizes to provide narrow strips of ventilation and at the same time produce interesting design effects.

Only common household tools are needed to erect an entire window wall. Top, bottom and ends of each unit have two grooves for insertion of splines for strengthening and sealing. All butted edges are covered with trim. The units are delivered fully glazed, ready for installation. Solar Air-Flo Inc., Elkhart, Indiana.

New product briefs

• **Seven tractor models**—Allis-Chalmers' industrial tractor dealers now offer seven models of four-wheel scrapers with struck capacities ranging from 2 to 18 cu yd. According to the company, this line was made available through the integration of four of their own models, with three made by Gar Wood. Capacities of each of the four Allis-Chalmers scrapers are: 2 cu yd struck; 4 cu yd struck and 4.7 heaped; 6.1 cu yd struck and 7.5 heaped; and 14 cu yd struck and 18 heaped. Capacities of each of the three Gar Wood scrapers are: 9 cu yd struck and 12 heaped; 12 cu yd struck and 14 heaped; and 18 cu yd struck and 23 heaped.

• **Trade name**—Yardley Plastics Company, Columbus, Ohio, announced a new trade name, "Clearstream", to be applied to all the firm's plastic pipe for water uses.

• **Putty for welds**—The General Electric Co, Pittsfield, Mass., claims that silicone bouncing putty "thinned to a fluid paste" helps to improve welds in steel plate and pipe. Painted on joints before welding, the product is said to promote uniform weld penetration and to eliminate the harmful effects of air on the underside of welds. It is suggested for use in all arc-welding processes except automatic inert-arc welding where argon is used as the shielding gas.

• **Grating selector**—The Safety Grating Division of A. C. Smith Corporation, 3533 North 27th Street, Milwaukee, Wis., has available a safety grating selector that enables the user to choose a grating for a specific load-span condition, and also indicates the deflection of grating selected. The device operates similar to a slide rule.

• **Heat calculator**—A slide calculator to figure heat gain through windows, is now available from Ingersoll Products Division, Borg-Warner Corporation, Chicago 4, Ill.

With the latitude of the building known as well as the azimuth (compass bearing) of the window, the calculator can figure, for any hour of the day and any day of the year: sun altitude, relative sun-window azimuth, shadow angle and heat transmission through bare windows and through windows protected by Ingersoll Kool-Shade Sun Screen. By changing inserts, these calculations can be made for most latitudes in the North American continent.

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EDITORIALS

The expected has happened

When Ohio's Appellate Court ruled that the Ohio Turnpike Commission must take competitive bids on both portland-cement concrete and asphaltic concrete for the paving on the projected Ohio Turnpike, state and city highway and street building officials saw trouble ahead. Although the reasoning that led the court to render that decision was involved (ENR April 2, p. 21) and can be read as not depriving the commission of its powers to determine what type of pavement should be laid on the turnpike, it was generally interpreted as taking from street and highway building officials their power of determining in advance what type of pavement should be used on a particular job and calling for bids on that type.

As a result, without waiting to see whether the Ohio Supreme Court will uphold the Court of Appeals, citizens have started actions against both the State Highway Department and the city of Columbus to compel them to take competitive bids on paving jobs where bids on only one type of pavement had been called. Before alternate bids can be taken, alternate designs must be made and the work in question must be held up. If the same reasoning is applied to all types of public construction, endless confusion could result.

Commercial development of atomic power

Last week's announcement that the Atomic Energy Commission is planning for early private, commercial development of atomic power (p. 156) recalled the claim often heard that nuclear industry growth may be limited by its ability safely to dispose of radioactive wastes.

Perhaps no industry in the history of man has grown at the rate of atomic energy. Ending the present government monopoly surely will spur even greater growth among many industrial concerns ready and anxious to proceed in the field as soon as permitted.

The private concerns should take note of a talk given before the American Chemical Society in Los Angeles last month by Arthur E. Gorman, sanitary engineer in AEC's division of engineering. He outlined successes so far in AEC's effort to keep environmental sanitation in the nuclear field ahead of the industry's unprecedented rate of growth. "It has been no simple task for a new industry to compress into a few years research and development that normally would take many years," he said.

Most wastes have been found to be low in radioactivity and toxicity. These can be held, tested for radioactivity, and released to the ground, stream or sewer when it is safe to do so. These are the sink drainages, wash waters, shield waters and laundry wastes. Possibilities of biological treatment of these low-level wastes are being explored by AEC, with special concern for the long-lived elements with their extended period of hazard.

High-level wastes, although relatively small in volume are costly to handle and require strict precautions. Evaporation to reduce volume is today's best means of treatment. Ion exchange works, but the spent material eventually must be disposed of; co-precipitation is applicable, but the contaminated sludge requires ultimate disposal. That means burial, dumping at sea, or incineration. Each has limitations.

The Atomic Energy Commission and its contract research agencies for some time will be the prime source of guidance in the problems of radioactive waste disposal. But if private interests are to enter the nuclear energy field before long, as indicated in last week's news, they must be thinking seriously of the waste disposal problem as a controlling factor in any possible future atom-power growth.

Who gets the gas tax?

Congressional hearings begin this week on a proposal from the Governors' Conference that the federal government withdraw from the field of motor-fuel taxation, thus opening the way for the states to increase their income from that source without having to increase the total tax paid by motorists. The implications of such a proposal are far-reaching.

Superficially, such a withdrawal would appear to be a quick way for the states to get directly about twice what they now get indirectly from the federal government in the form of federal aid for highways, even if Congress terminated all federal aid at the time it abandoned the federal gas tax. Yet what seems more likely to happen is that acceptance of the governors' proposal by Congress would largely disorganize the current construction programs of the state highway departments and actually slow up work on the nation's main highways just when more work is needed. This is due to the fact that in most states the highway laws apportion the state's income from gas taxes among the state highway departments, the city public-works department and county governments. Consequently, it seems quite probable that in many states the state highway departments would not get as much money under the governors' proposal as they could under the plan sponsored by the American Association of State Highway Officials and the American Road Builders Assn., which would have the federal government continue the federal tax but increase federal aid to the total amount of its income from gas tax.

If Congress accedes to the governors' request, the timing of the change needs to be such as to make certain that it will not upset the current program of main highway construction.

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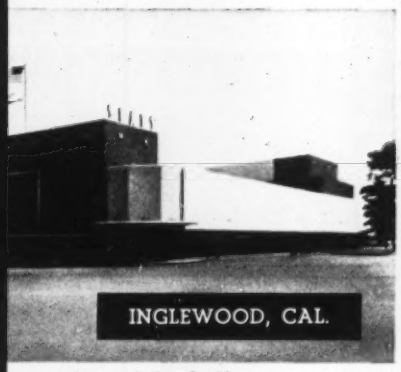

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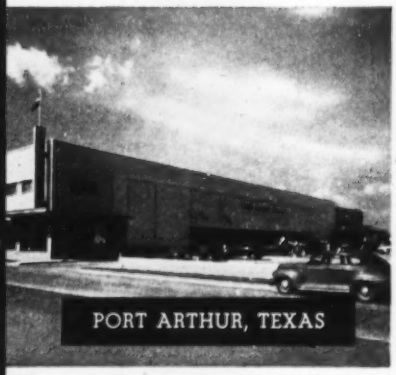

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